

MAN VS TANK: THE GI THE JAPANESE COULDN'T KILL

HISTORY *of* WAR



CROMWELL THE CONQUEROR

WHY KILLER CAVALRY TACTICS CRUSHED THE KING AT NASEBY

★ ★ ★ ★ ★ THE BATTLE OF BRITAIN ★ ★ ★ ★ ★

303 SQUADRON

HOW POLAND'S PILOT ACES CRIPPLED THE LUFTWAFFE

PLUS:

- ★ Bellerophon vs L'Orient
- ★ Darfur in crisis
- ★ Battle of Actium

MARY ROSE

STEP ABOARD HENRY VIII'S FLAGSHIP

Digital Edition

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ISSUE 018



IMAGINE PUBLISHING



SIKH REGIMENTS

MEET THE BRITISH EMPIRE'S UNSUNG WORLD WAR HEROES



ART OF WAR BOWS

WHY DID THE LONGBOW DOMINATE EVERY BATTLEFIELD?



WARSHIPS

FROM ANCIENT TRIREMES TO FLOATING FORTRESSES



HITLER'S ENGINEER

FERDINAND PORSCHE'S NAZI WAR MACHINES

JOURNEYS OF REMEMBRANCE

BESPOKE TOURS WITH THE ROYAL BRITISH LEGION



NORTH EAST INDIA 2016

One of the undoubted highlights of our 2014 programme was the Journey of Remembrance to India.

We are pleased to offer this Journey again in 2016, with the bonus of including a journey to Imphal.

At Kohima and Imphal in the remote hillsides of North East India, the tide of the war in the East turned against the Japanese in 1944.

This unique tour offers a rare opportunity to honour those who so bravely fought and fell as we hold Services of Remembrance at both Kohima and Imphal War Cemeteries.

The tranquil and unspoilt beauty of North East India with its thick forests, lush valleys, emerald tea gardens and great rivers is in stark contrast to the cities of Kolkata (Calcutta) and Delhi, a fusion of modern skyscrapers and Victorian monuments to the Raj.

Sun 03 - Sat 16 Apr 2016

With: Mike Bradley

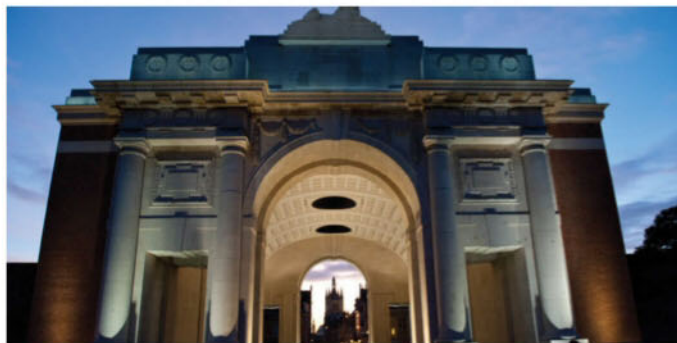
Ref: 16000

Duration: 13 nights

Prices: from £4445 per person

Single supplement: £499

Deposit: £400



YPRES ARMISTICE DAY 2016

Ever since 1928, the 54,896 brave soldiers of the British Commonwealth who were tragically registered as 'missing in action' during WW1, have been commemorated by The Last Post being sounded under the Menin Gate.

Every single day, regardless of the weather, the Ypres buglers, who are members of the local fire brigade, perform their ode to the fallen.

No battlefield of the Great War saw more intensive fighting than the Ypres Salient in Belgium. Down the Menin Road, on Messines Ridge and at Passchendaele, nearly every regiment in the British Army passed this way. Many thousands never returned. We will also visit sites associated with the various campaigns in the Ypres area and have a chance to pay our respects by laying wreaths at some of the cemeteries, including Tyne Cot Commonwealth War Graves Cemetery and the Memorial to the Missing.

Tour price: £549.00 per person

Tour to include:

3 nights accommodation at the Mecure Lille Aeroport Hotel

Breakfast daily

Lunch and Dinner on Day 3 (or similar)

All coaching as per itinerary

Services of a Legion guide throughout

SOMME 2016 OVER THE CENTENARY

The Battle of the Somme began on a bright July morning in 1916. After five months of gruelling struggle this piece of French countryside was reduced to razed villages and burnt out farmland. By the end of the battle there were over 420,000 casualties.

It is those men who we will never forget and who we honour on this tour. We will arrange personal visits to the memorials and cemeteries in the Somme area and learn how they are maintained by the Commonwealth War Graves Commission.

This tour will take place over the centenary event on the weekend of 1st July. If you would like more information please contact Arena Travel on the details below.

Tour price: TBA

Tour includes: 4 nights accommodation on a B&B Basis

Coach travel throughout from central London

Return ferry crossings

Legion guide



Remembrance Travel, the travel arm of The Royal British Legion, has been running tours since 1927 and is now working in partnership with Arena Travel on First & Second World War Journeys of Remembrance and anniversary event.

Whether you are an association, a group of friends or a club, we can also create a bespoke, personalised tour, which is unique to your needs. Call 01473 660 800

LIVE ON

THE ROYAL BRITISH
LEGION



Welcome

“Had it not been for the magnificent material contributed by the Polish squadrons... I hesitate to say that the outcome of the battle would have been the same”

– Air Chief Marshal Sir Hugh Dowding

When we read about the RAF or the army during the world wars, it's important to remember the diversity of those who served.

A huge number of the losses at the Battle of Neuve Chapelle in 1915 were from the 1st Indian Corps. Far from home, these men found themselves in some of the worst conditions on the Western Front, but until recently their sacrifice has been largely forgotten.

Some of the most tenacious pilots that flew in the Battle of Britain were the men of 303 Squadron. A majority Polish unit, these men had fought all through Western Europe, and continued to fly with the RAF.

Despite language barriers and cultural differences, these men found a common cause to fight for Britain. They showed no less bravery in battle, so their memories deserve no less respect.



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Deputy Editor



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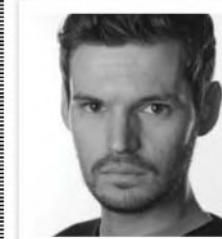
DAVID SMITH

David teaches the MA in Military History at the University of Chester and is the author of several academic titles. In this issue, he explores the story of 303 Squadron, who fought the Nazis in the air, from Poland to Britain (page 26).



MIGUEL MIRANDA

Darfur has seen one of Africa's most brutal wars, and is still unstable to this day. This month, Miguel has delved into the complex series of events, dictators and uprisings that have added to the crisis in this issue's Briefing (page 86).



JACK GRIFFITHS

In honour of the 75th anniversary of the Battle of Britain, our Senior Staff Writer takes you on a full tour of a Spitfire SM520 on page 68. He's also cast his researcher's net back to the days of empire in his Sikh Regiments feature (page 52).

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At the Battle of Neuve Chapelle in 1915, Sikh soldiers fought alongside their British comrades

Mary Evans



Frontline

12 **Warships**

Battling on the waves, the age of sail has produced some of the fiercest fighting vessels

14 **Warships of the world**

Taking the fight to oceans all over the globe, the war at sea has proven crucial to world history

16 **Heroes of the age of sail**

The innovative admirals and commanders who led their fleets to resounding victories

18 **Anatomy of the Mary Rose**

Peer inside Henry VIII's prized warship and discover what caused its catastrophic sinking

20 **Battle of Actium**

During one of the most famous showdowns in history, Antony and Octavius clash at sea

22 **Head to head**

French and British ships of the line slog it out at the Battle of the Nile, but which was the victor?

24 **The birth of ironclads**

Maurice Huty, chairman of the HMS Warrior Association, discusses the advent of iron ships

Subscribe

63 Never miss an issue, get your **History of War** before it's in the shops and save a bundle while you're at it!

The bow that built Britain

46 Just what made the English Longbow so deadly?



HITLER'S ENGINEER

78 Explore Ferdinand Porsche's Third Reich war machines

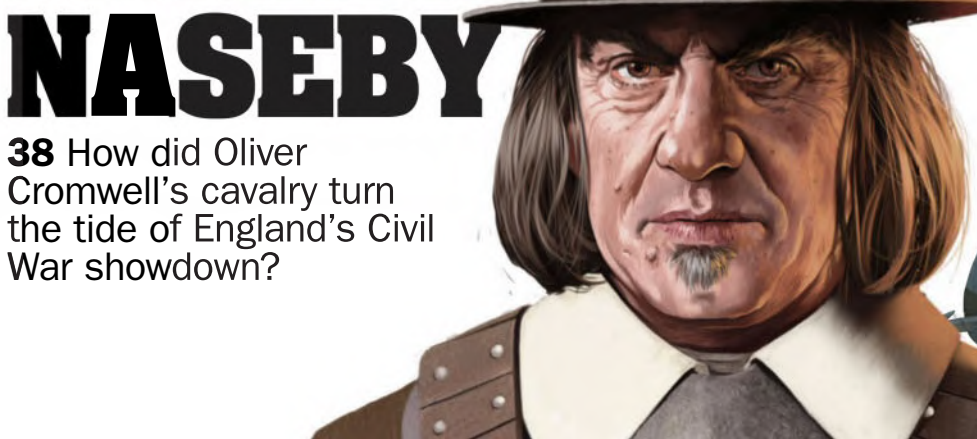




52 The real story of the British Empire's forgotten warriors



64 The unbelievable story behind Dirk Vlug's Medal of Honor



38 How did Oliver Cromwell's cavalry turn the tide of England's Civil War showdown?

06 WAR IN FOCUS

Stunning imagery from throughout history, showing war in all its jaw-dropping detail

26 303 squadron

David Smith recounts the bravery and skill of the RAF's Polish fighter aces

38 GREAT BATTLES Naseby

Parliament's New Model Army faces off against the Royalist forces of Charles I

46 The bow that built Britain

Explore the craftsmanship that helped shape the world's deadliest war bow

52 Sikh regiments

Jack Griffiths rediscovers the little-known story of India's world war heroes

64 MEDAL OF HONOR HERO Dirk Vlug

How did one man manage to take on a convoy of tanks and win? Find out here

68 OPERATOR'S HANDBOOK Spitfire SM520

Get inside the Battle of Britain war machine that fought the Nazis in the skies

78 Hitler's Engineer

Uncover Ferdinand Porsche's secret past building the Third Reich's war machines

86 THE BRIEFING The war in Darfur

Miguel Miranda lifts the lid on the crisis tearing South Sudan and the region apart

92 Book reviews

A selection of the latest military titles waiting for you on the shelves

98 WAR IN NUMBERS Battle of Britain

Get to grips with the numbers involved in this monumental fight for air supremacy

OPERATOR'S HANDBOOK

68 Spitfire SM520



WARⁱⁿ FOCUS

FIRE IN THE HOLE!

Taken 3 September 2013

Marines fire a shoulder-launched multipurpose assault weapon as part of a movement-to-contact training evolution during Exercise Koolendong at Bradshaw Field Training Area, Northern Territory, Australia. The Marines are with Company L, 3rd Battalion, 3rd Marine Regiment, Marine Rotational Force-Darwin, III Marine Expeditionary Force.







WARⁱⁿ FOCUS

THE CONQUEST OF SIBERIA

Painted c. 1895

Painted by Vasily Surikov, this dramatic scene depicts Yermak Timofeyevich's men fighting at the Battle of Chuvash Cape (1582). Beginning his expedition to Siberia in around 1579-81, Yermak and his band of more than 800 men fought against thousands of native Siberian Tatars, who were defeated by superior firepower. The Khanate of Sibir, led by Kuchum Khan, fell shortly after Yermak's victory.





WARⁱⁿ FOCUS

THE 'C' IN ANZAC STANDS FOR CAMELS

Taken c. 1916-18

Men from the Australian Imperial Camel Corps Brigade (ICCB) line up for inspection shortly before heading off into the desert. The brigade's four battalions fought predominantly in the Middle East against the Ottoman Empire and was made up of units from New Zealand, Australia and Great Britain. Though less easy to handle than horses at times, the creatures were far better adapted to desert conditions, so were pressed into military service.

WARSHIPS

From crude ancient ramming vessels to floating fortresses, the age of sail brought warfare from land to the high seas



SHIP OF THE LINE THE VESSELS THAT HELPED WIN TRAFALGAR

Founded: 17th century
Country: Britain

A direct descendant of the galleon, ships of the line ruled the seas for a long time. Fighting in a formation known as the 'line of battle', they used more than 100 cannons in their broadside shots. These ships helped to put an end to the tactic of boarding rivals and ushered in a new era of combat and exploration.

Left: HMS Victory is one of the most famous ships of the line and the world's oldest navy ship still in commission

Right: The Armada had more than 150 ships at full strength but was defeated by a combination of English engineering and English weather

PATACHE THE WARSHIP THAT SERVED THE SPANISH ARMADA WITH DISTINCTION

Founded: 15th century
Country: Spain

The Spanish Armada was a mighty beast and one of the many types of ships that served in it was the patache. Similar to a caravel, it was used by many of the major European powers in a variety of capacities, but was most effective utilising its speed to attack trade vessels.



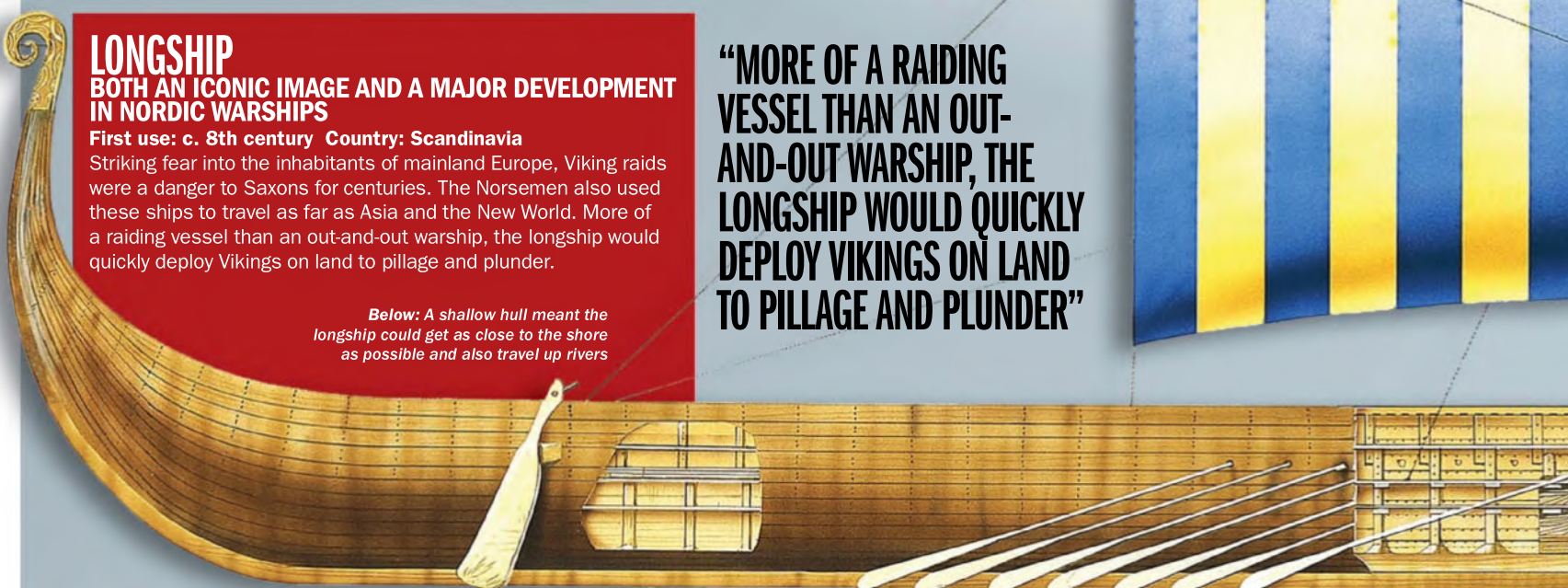
LONGSHIP BOTH AN ICONIC IMAGE AND A MAJOR DEVELOPMENT IN NORDIC WARSHIPS

First use: c. 8th century **Country:** Scandinavia

Striking fear into the inhabitants of mainland Europe, Viking raids were a danger to Saxons for centuries. The Norsemen also used these ships to travel as far as Asia and the New World. More of a raiding vessel than an out-and-out warship, the longship would quickly deploy Vikings on land to pillage and plunder.

Below: A shallow hull meant the longship could get as close to the shore as possible and also travel up rivers

“MORE OF A RAIDING VESSEL THAN AN OUT-AND-OUT WARSHIP, THE LONGSHIP WOULD QUICKLY DEPLOY VIKINGS ON LAND TO PILLAGE AND PLUNDER”



CARRACK

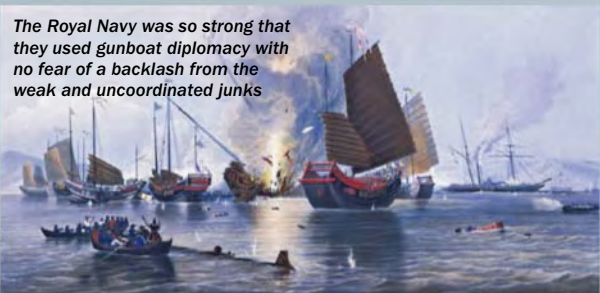
AN EFFECTIVE DESIGN THAT WAS A FORERUNNER FOR THE BIGGER AND BETTER VESSELS THAT FOLLOWED

Founded: 14th century
Country: Italy

Originating in the navies of the Mediterranean powers, carracks were small three or four-masted boats and a precursor to galleons. They were used in both a trading and military capacity. The most famous of the military carracks was the Mary Rose, Henry VIII's flagship.



New ship designs like the carrack made cross-Atlantic journeys to the New World possible



The Royal Navy was so strong that they used gunboat diplomacy with no fear of a backlash from the weak and uncoordinated junks

CHINESE WAR JUNK

THE CLASSIC BOAT THAT BECAME DATED WHEN TRYING TO DEFEND CHINA'S ECONOMIC INTERESTS

Founded: 19th century
Country: China

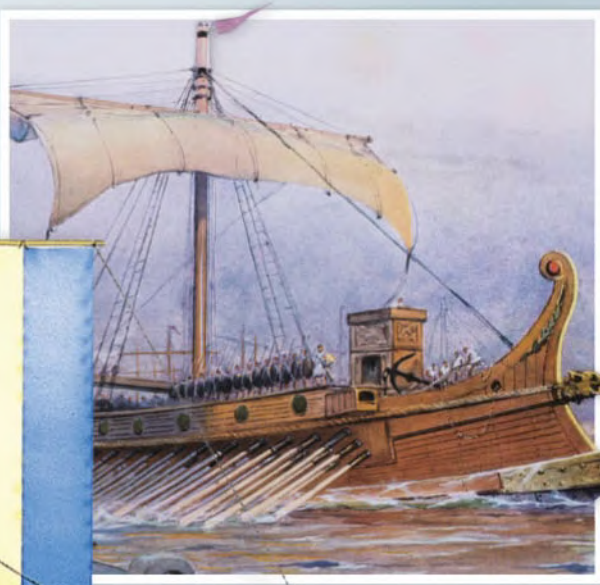
Junks had been around for centuries but were primarily used for merchant shipping until the Opium Wars. Constructed to combat the Western powers, they were no match for the British vessels and were defeated in their droves. This paved the way for a new direction of armoured and steam-powered ships.

TRIEME

THE MARITIME BEHEMOTH OF THE ANCIENT ERA

First use: c. 700 BCE
Country: Ancient Greece, Ancient Phoenicia, Ancient Rome

Many ancient empires based their navies on the design of this ship. Triremes used bronze-capped rams at their front to smash rivals out of the water. The design was later taken on by the Romans, until it was superseded by galleys such as the liburnas and dromons as the empire grew.



Above: The trireme's tactic was to ram and then board the rival ship with hoplites and archers

5 Facts about WARSHIPS

THE TRIEME CREW

These warships would have been nothing if it weren't for a large army of slave rowers. Each trireme could have up to 170 men sat beneath the deck with next-to-no protection against oncoming rams.

GUNBOAT DIPLOMACY

The Royal Navy was so strong in the 19th century that it could intimidate any area it wanted to conquer with the threat of the cannons from its galleons and ships of the line.

REFITTING AND RENEWAL

Many war ships were refitted so often during their lifetimes, that very little of their original materials remained and they were considered in many ways entirely different ships.



Above: The Constitution in battle with the HMS Guerriere

STILL FLOATING STRONG

Though the HMS Victory is the oldest ship of the line still in commission, the USS Constitution, moored in Boston Massachusetts is the oldest floating war ship.

A NEW AGE OF IRONCLADS

The very first clash between ironclad warships took place during the American Civil War in 1862. Because armament had not yet developed to penetrate metal hulls, neither side was able to gain the upperhand and the battle was a stalemate.





Frontline

WARSHIPS OF THE WORLD

The world's oceans have been home to some major battles, from the time of the Ancient Greeks to the Napoleonic Wars

Brig

18th century

Speciality: Fast two-masted ship

Location: USA



Ship of the line

17th century

Speciality: Huge ships packed with cannons

Location: Britain

Caravel

15th-16th century

Speciality: The workhorse of the Renaissance era

Location: Spain

Man o' War

16th-18th century

Speciality: Ending the age of galley warfare

Location: Portugal

Fluyt

17th century

Speciality: Opening up the New World to the Dutch

Location: Netherlands

Longship

793

Speciality: Surprise attacks on coastal towns and ports

Location: Scandinavia

Galleon

16th-18th century

Speciality: 500-ton gunship

Location: Mediterranean

Trireme

480 BCE

Speciality: Ramming other vessels

Location: Greece

War galley

264 BCE

Speciality: Overwhelming the Carthaginian navy

Location: Italy

Carrack

14th-17th century

Speciality: The caravel's big brother

Location: Italy



1 THE BATTLE OF CHESAPEAKE

ATLANTIC OCEAN, OFF THE VIRGINIA CAPES, USA

5 SEPTEMBER 1781

A major blow to the British in the American War of Independence, as Chesapeake Bay is lost to the French after a battle that sees the navy failing to support its army at the siege of Yorktown.



Although it was tactically inconclusive, the British failure at Chesapeake prevented the navy from rescuing Lord Cornwallis's army

2 THE BATTLE OF TRAFALGAR

ATLANTIC OCEAN, OFF CÁDIZ, SPAIN 21 OCTOBER 1805

Off the coast of Spain, the French and Spanish navies gear up to face the British. Huge ships of the line fire cannonballs into one another, and the Royal Navy emerges victorious.

3 BATTLE OF BALTIMORE

FORT MCHENRY, OFF THE COAST OF MARYLAND
12-15 SEPTEMBER, 1814

British ships bombard Fort McHenry, during a joint sea and land battle. The sight of the fort being attacked inspires *The Star Spangled Banner*.

4 THE BATTLE OF SLUYS

OFF SLUYS IN THE FRENCH FIEF OF FLANDERS
24 JUNE 1340

The largest naval battle of the Hundred Years' War is an emphatic victory for the outnumbered English, as the French lose 20,000 men. The Channel now belongs to the English.

East Indiaman

17th century

Speciality: Huge ships that help the Imperial forces command and conquer
Location: India



Turtle ship

15th-19th century

Speciality: Tough protective shell
Location: Korea

7

Chinese war junk

Early-19th century

Speciality: Last stand against the British in the Opium Wars
Location: China

6

7 THE BATTLE OF RED CLIFFS

CLOSE TO THE YANGTZE RIVER, CHINA 208

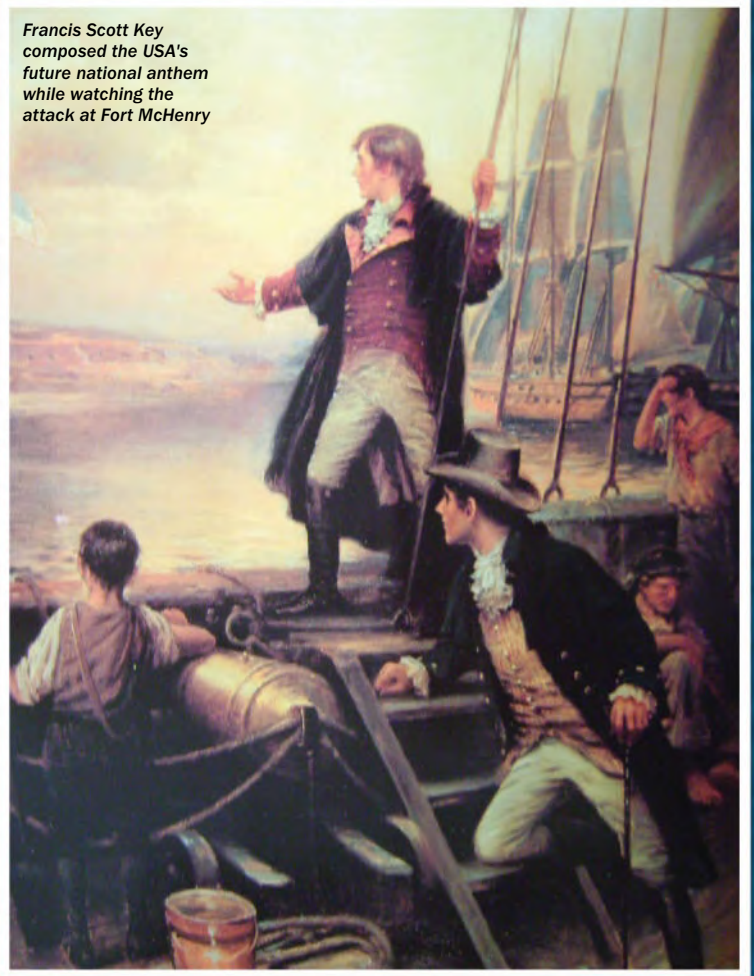
The battle kick-starts the Three Kingdoms period of Chinese history, as Cao Cao fails to unite China after his 800,000 soldiers down at the hands of enemy fire ships.

8 THE BATTLE OF LEPANTO

GULF OF CORINTH, OFF GREECE 7 OCTOBER 1571

Around the coast of Greece, the Christian Holy League faces off against the Ottomans. Both sides tussle over control of Cyprus in one of the final battles to use galley warfare.

Francis Scott Key composed the USA's future national anthem while watching the attack at Fort McHenry



5 THE BATTLE OF CAPE ECNOMUS

MEDITERRANEAN SEA, OFF SICILY 256 BCE

During the First Punic War, Rome sends 330 ships against Carthage in one of the biggest naval attacks of the ancient world. The subsequent Roman victory opens up Africa for a land invasion.

6 THE BATTLE OF YAMEN

GUANGDONG PROVINCE, CHINA 1279

In one of history's biggest ever underdog victories, the Chinese Song Dynasty is roundly defeated by the invading Mongolian Yuan Dynasty as 50 warships overpower a 1,000-strong force by blockading the Yamen Bay.

The Battle of Lepanto was the result of Venetian and Ottoman rivalry in the Eastern Mediterranean



HEROES OF THE AGE OF SAIL

The admirals and strategists who conquered the seas

THEMISTOCLES (C.524-459 BCE)

YEARS ACTIVE: 493-472 BCE

FORCE: GREEK ALLIANCE

COUNTRY: ATHENS

The Athenian politician and soldier, Themistocles was the first leader to recognise the importance of a navy, and the mastermind of the Greek defeat of Persia at the Battle of Salamis in 480 BCE. Themistocles was not an aristocrat, but rose to political office as a populist. Following the first Persian invasion of Greece, he fought at Marathon in 490 BCE. Afterwards, he persuaded the Athenians to build a fleet of 200 triremes.

In 480 BCE, Xerxes of Persia invaded Greece again. After the Spartans' rearguard action at Thermopylae and defeat at sea at Artemisium, Themistocles turned the tide. He withdrew his fleet into the Straits of Salamis and trapped the much larger Persian fleet in the narrow straits. The consequences of the Greek victory were immense, both for the history of naval warfare and for the development of democracy. Defeated, Xerxes withdrew his land army. Meanwhile, the Athenian victory accelerated the unification of the Greek city states and the development of democracy.



Themistocles, the 'Glory of the Law', and the father of naval warfare

"England Expects That Every Man Shall Do His Duty": Nelson, by Lemuel Francis Abbott, 1799



VICE-ADMIRAL LORD HORATIO NELSON (1758-1805)

YEARS ACTIVE: 1771-1805

FORCE: ROYAL NAVY

COUNTRY: GREAT BRITAIN

Horatio Nelson's victories in the French Revolutionary and Napoleonic Wars make him the greatest naval commander in European history. A brilliant tactician and brave leader famed for the 'Nelson touch', he exemplified the Royal Navy's tradition of aggressive engagement, and was wounded several times before his death at Trafalgar.

Entering the service aged 12 with help from his uncle Horace Suckling, Nelson's early career took him to the West Indies, the American coast during the War of Independence, India, and to within ten degrees of the North Pole. Commanding a frigate at the Battle of Cape St Vincent in 1797, he disobeyed orders and captured the Spanish warships San Josef and San Nicolas. Later that year he

was nearly killed in hand-to-hand fighting off Cádiz, and ended up losing his right arm in an amphibious landing at Tenerife.

After recovering his health, in 1798 Nelson tracked Napoleon's fleet to Aboukir Bay, off Alexandria. Surrounding the French fleet by slipping half of his force between their ships and the shore, his comprehensive victory ended Napoleon's dream of an eastern empire. At Copenhagen in 1801, Nelson again disobeyed orders, and led the defeat of the Danish navy.

Nelson was now a national hero, and notorious for his love affair with the ex-model Emma Hamilton, wife of William Hamilton, ambassador to Naples. In 1803, Nelson took to sea for the last time on HMS Victory. When the French escaped his blockade at Toulon, he chased them to the West Indies and back, before heading them off at Cape Trafalgar. As Victory advanced towards the French line, Nelson refused to remove the decorations on his coat, which would make him a target for sharpshooters. Shot by a musket at short range, he died in the closing stages of his greatest triumph.



The corvus bridge
in action at Mylae



GAIUS DUILIUS (3RD CENTURY BCE)

YEARS ACTIVE: 260-258 BCE

FORCE: ROMAN NAVY

COUNTRY: ROMAN EMPIRE

Strategist and tactical innovator, Gaius Duilius won Rome's first naval victory and began Rome's conquest of the Mediterranean. Like Themistocles, Duilius was born a commoner but rose to power. In 260 BCE, when Rome and Carthage began the First Punic War, he was elected consul.

Scipio Asina, a patrician, commanded the Roman fleet; Duilius commanded the army. But

the Carthaginians captured Asina, leaving Duilius as the commander of the struggle for power in the Mediterranean. 130 Carthaginian and 100 Roman ships met at Mylae, off the northern coast of Sicily. The Carthaginians expected to trounce the inexperienced Roman fleet, but Duilius had devised a secret weapon: the corvus, a boarding ramp.

Deploying the corvus, the Romans quickly seized 30 Carthaginian ships. As the Carthaginians manoeuvred desperately away, the Romans managed to take another 20. Afterwards, the Carthaginian leadership crucified their defeated admiral, Hannibal Gisco. Duilius received the honour of Rome's first naval triumph.

SIR FRANCIS DRAKE (C.1544-96)

YEARS ACTIVE: C.1567-96

FORCE: ENGLISH NAVY

COUNTRY: ENGLAND

Explorer, privateer, warrior, slaver and vice-admiral of Elizabeth I's navy, in 1580 Francis Drake became the first commander to circumnavigate the globe and return alive. In 1572, he raided the Isthmus of Panama, stealing Peruvian silver and gold that was awaiting shipment to Spain. In 1577, licensed to raid Spanish ships and ports, he

launched a six-ship raiding expedition along the coast of South America.

He lost ships to storms and sailors to disease; only his flagship, Golden Hind, rounded Cape Horn and entered the Pacific. Raiding ports and treasure ships, Drake claimed 'New Albion' (San Francisco) for England, then crossed the Pacific. He and 59 surviving crewmen reached Plymouth in September 1580, loaded with treasure. Knighted, he led another transatlantic raid in 1585-86 and was second-in-command of the fleet that faced the Spanish Armada. In 1596, stricken by dysentery off the coast of Panama, he insisted on dying in his armour.

Sir Francis
Drake in
1581



MICHEL DE RUYTER (1607-76)

YEARS ACTIVE: 1637-76

FORCE: DIRECTORS' SHIPS

COUNTRY: DUTCH REPUBLIC

The son of a beer porter, Michiel de Ruyter served as a musketeer in the Dutch republic's war of independence from Spain then entered the merchant marine as a trader and whaler. In the 1640s, he took part in successful sea campaigns against the Spanish, and in 1652, when Holland went to war with Cromwell's English republic, de Ruyter served as a squadron commander in Holland's privately funded navy of directors' ships.

After defending Dutch shipping in the Baltic, Mediterranean and Atlantic, de Ruyter commanded the Dutch fleet in the Second Anglo-Dutch War from 1665-67. In 1667, he ambushed the English fleet in its dock at Chatham, destroying the English flagship Royal Charles and humiliating the Royal Navy. In the Third Anglo-Dutch War from 1672 to 1674, de Ruyter saved Holland from English and French invasion. He died after being struck in the right leg by a French cannonball at the Battle of Augusta, off Sicily.

YI SUN-SIN (1545-98)

YEARS ACTIVE: 1577-98

FORCE: KOREAN NAVY

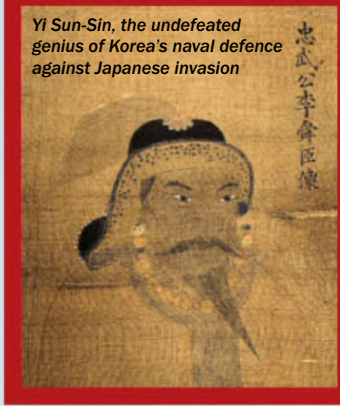
COUNTRY: KOREA

Undefeated in 23 battles with the Japanese, often against high odds, Yi Sun-Sin had no formal training in naval strategy but became the greatest Asian commander of the age of sail. In 1591, as Korea's Joseon dynasty braced for a Japanese invasion, Yi, an experienced soldier, was given a naval command.

The Japanese admiral Toyotomi Hideyoshi fielded a massive navy of 1,700 ships, but the Korean sailors knew the coastal tides and shallows, and Yi had the 'turtle' ship, which had protective spikes on its deck and a dragon-headed bow whose mouth launched cannon or flames.

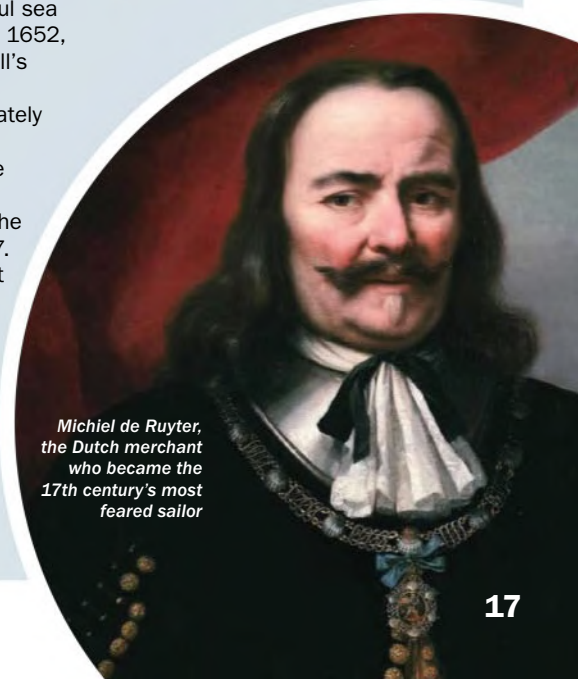
In 1597, Yi won his greatest victory at Myeongnyang. His 13 ships were Seoul's last line of defence against 133 Japanese ships. Yi lured them into the Myeongnyang Strait, whose currents became a force multiplier for the defenders, and an obstacle for the attackers. He destroyed a third of the Japanese force during the battle.

Yi Sun-Sin, the undefeated
genius of Korea's naval defence
against Japanese invasion



Images: Alamy

Michiel de Ruyter,
the Dutch merchant
who became the
17th century's most
feared sailor



THE MARY ROSE

Henry VIII's flagship is famed for its demise, but the subject of the largest maritime archaeological excavation ever undertaken has much more to it than meets the eye

THE MARY ROSE

TYPE OF SHIP: CARRACK, WARSHIP
ORIGIN: PORTSMOUTH, HAMPSHIRE, ENGLAND
COMMISSIONED: 1511
LENGTH: 45 METRES (147 FEET)
CREW: 415 (EXCLUDING OFFICERS AND RETIQUES): 200 MARINERS, 30 GUNNERS, 185 SOLDIERS

ARMAMENT: 250 LONGBOWS, 9,600 ARROWS
 50 HANDGUNS
 150 BOARDING PIKES
 150 BILLS
 3 LARGE INCENDIARY DARTS
 91 GUNS:
 15 CARRIAGE-MOUNTED CAST-BRONZE MUZZLE LOADERS
 24 CARRIAGE-MOUNTED WROUGHT-IRON BREECH LOADERS
 30 WROUGHT-IRON BREECH-LOADING SWIVEL GUNS
 20 HAND-HELD/SHIP-SUPPORTED CAST-IRON MUZZLE-LOADING GUNS
 2 TOP GUNS

NETTING

Netting strung above the upper deck between the castles was a deterrent to boarders, but also prevented the crew escaping as the ship sank. Of the 500 men on board, only between 30 and 35 survived.

ANTI-BOARDING MEASURES

Spot finds of archery equipment on the upper deck in the waist of the ship indicate that archers were moving about during the battle in anticipation of close-quarters actions and anti-boarding manoeuvres.

BLINDS

Some of the 'blinds' in the waist of the ship on the upper deck were removable so archers and soldiers with handguns could be positioned there.

GUN DECK FIREPOWER

Seven broadside guns were stationed at lidded gun ports supporting a mixture of cast-bronze muzzle loaders and wrought-iron breech loaders. During the excavation, all were found on their wooden carriages.

REASON FOR SINKING

The Mary Rose sank due to water pouring in through her starboard gun ports. The gun port lids were found open and hinged back against the side of the ship.

SHOT LOCKERS

The three main shot lockers. 1,248 cast iron shot, 387 stone shot, composite shot and canister shot have been found during excavation.

LOGS

Substantial amounts of quartered logs were found, which was a store of wood for the Mary Rose.

FOOD STORES

Butchered half carcasses of pork (headless and split down the centre) were found in one area. The position they were in suggested that they had been hung and were probably salted.

THE RISE AND FALL OF THE MARY ROSE

Henry VIII came to the throne in 1509; a year later work began on two new ships. It is believed that the Mary Rose was one. During his reign, Henry increased the British fleet from four vessels to 58, and 20 of these were great ships (four-masted warships). The Mary Rose was the second largest of these. Its life span somewhat mirrors the reign of the king (1509-47), as it sank on 19 July 1545 defending the English coast from a French invasion force larger than the Spanish Armada.

This was a short period of intense change, with a dramatic shift in the types of guns and the nature of warfare. Ships used to employ the tactic of very short-range bombardments followed by boarding, but the change brought longer-range warfare where the ships would move closer. There was still some close-quarters conflict, as demonstrated by the numbers of longbows and staff weapons carried on board. Ships like it, with the capability of at least a partial broadside, marked the beginning of a type of warfare that was to endure until the middle of the 19th century. The Mary Rose, with her incendiary darts, longbows and long-range culverins, was indeed a ship of a transitional era.

An Anthony Roll illustration of the Mary Rose



FORWARD FIRING CAPABILITIES

Due to the shape of the hull, the ability to fire ahead was limited. The main forward firing capability was through cast bronze culverins on the castle deck facing forward at the front of the sterncastle.

CAST IRON GUNS

Four of the 20 'hailshot pieces' listed for the ship were found. These guns are the first evidence of the mass production of cast iron guns in England. With a rectangular bore they fired small iron dice at short range.

GUN DECK CABINS

The main gun deck was not only a fighting area. Cabins for the navigator, surgeon, and carpenter were also located on this deck.

ARCHERS, BOWS AND ARROWS

For the battle, chests of bows and arrows had been taken up from the main archery store on the orlop deck in the stern to the upper deck just inside the sterncastle, the muster station for the archers.

MATCHLOCK ARQUEBUSES

Parts of five of the 50 handguns listed for the ship were found. Three are snap matchlock arquebuses imported from the town of Gardone in Italy. Historical documents verify that 1,500 were imported in 1544 in preparation for the war with France.

INCENDIARY DARTS

Three long darts with incendiary sacks bound close to their heads were found beside a large gun on the main deck.

IRON GUNS

The ship represented the most advanced weapons systems of its time. Breech loading, the iron guns could fire solid limestone shot or, at closer range, canisters filled with flakes of flint or pebbles.

ENGAGING THE FRENCH

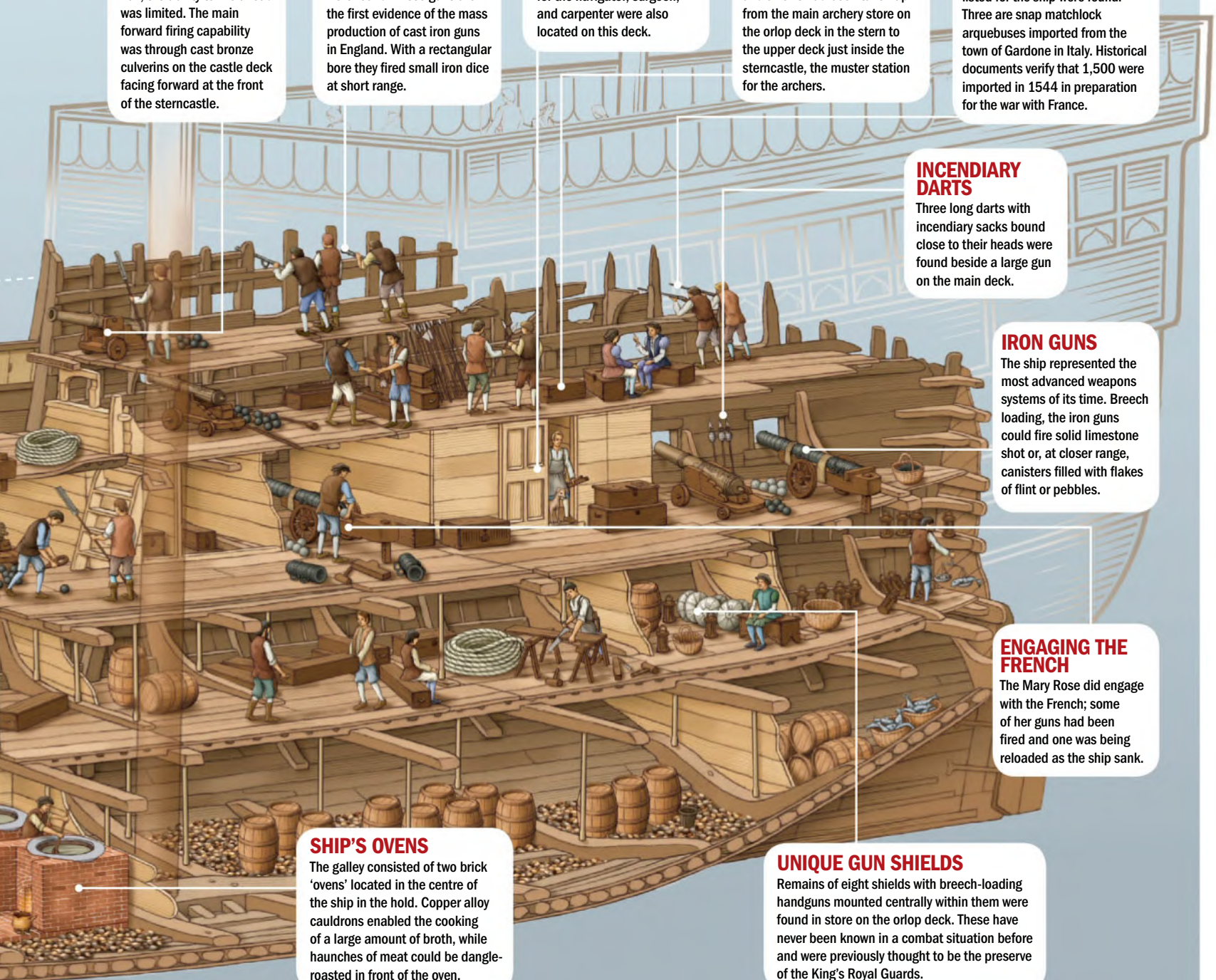
The Mary Rose did engage with the French; some of her guns had been fired and one was being reloaded as the ship sank.

SHIP'S OVENS

The galley consisted of two brick 'ovens' located in the centre of the ship in the hold. Copper alloy cauldrons enabled the cooking of a large amount of broth, while haunches of meat could be dangle-roasted in front of the oven.

UNIQUE GUN SHIELDS

Remains of eight shields with breech-loading handguns mounted centrally within them were found in store on the orlop deck. These have never been known in a combat situation before and were previously thought to be the preserve of the King's Royal Guards.



THE BATTLE OF ACTIUM

Octavian and Agrippa take on the infamous Antony and Cleopatra near Epirus, Greece, on 2 September 31 BCE

Following a struggle for power over Rome, former triumvirs Octavian and Mark Antony (the latter based in client-kingdom Egypt) faced each other in battle at sea near the city of Actium, off the coast of Epirus. Antony had the advantage of experience, bigger and heavier ships, and greater manpower, but Agrippa, Octavian's general, held the fierce loyalty of the Roman soldiers at his command. Deciding to fight at sea, Antony held a huge advantage over Agrippa's fleet, as his quinqueremes were far heavier than their Roman equivalents.

1 ANTONY PREPARES AT ACTIUM

Antony's warships wait at the harbour. He has ordered full sail on his ships, which is strange, as sails are for cruising, not fighting, where rowers are used. His 250-ton quinqueremes are weighted with iron plating and bronze spikes for ramming, with eight and ten banks of oars.

2 OCTAVIAN AND AGRIPPA'S FLEET

Octavian's 250 ships are small, but he has the advantage of speed and manoeuvrability with his well-trained and disciplined crews, especially in stronger tides nearer the harbour. Antony's superior ships are under-manned by inexperienced 'mule-drivers, farmers, and boys'.



All the ships left behind by Antony were either captured or sunk



THE AFTERMATH OF ACTIUM

WHILE HIS MEN LOYALLY FOUGHT TO THE END, ANTONY ABANDONED HIS FLEET AT ACTIUM, AND WITH IT HIS REPUTATION AND CHANCE TO RULE ROME FROM THE EAST

As a battle, Actium wasn't actually that spectacular: full of idling, false starts and delays. Had Antony seized his chance months earlier and taken Octavian and Agrippa's troops in a land battle, he'd have been victor easily. Historian Plutarch, who is more interested in Octavian's moral superiority than tactics, weapons and battle plans, assures us that Antony was too besotted with Cleopatra to succeed, and that he arrogantly desired to meet Octavian at sea.

The consequences of Actium are more impressive: they were and are literally the stuff of Hollywood, as Cleopatra subsequently cut a deal with Octavian in which she betrayed Antony and manoeuvred him into killing himself. She then cheated Octavian of his triumphal prize of a defeated queen to display in Rome with her own dramatic suicide.

With Antony defeated and Egypt annexed (after the battle of Alexandria in 30 BCE, where all of Antony's ships sailed out to meet Octavian's and simply joined his side), Actium became a pivotal landmark in Roman history, signifying Octavian's victory over the last of his great rivals, bringing to an end a century of civil war, and taking control of the Roman empire. The way that Rome would be ruled changed forever.

3 BATTLE LINES ARE SET

Octavian's line of ships faces his enemy's, with the left wing led by Agrippa and the right by Octavian himself. He plans to surround Antony's ships and fight at close quarters with swords and shields, as if on land besieging a town. Antony draws his ships tightly together, hoping to lure Octavian closer and drive his ships against the shore.

4 ANTONY BOOSTS MORALE

Antony rallies his troops as his 500 ships face the Roman fleet: they can rely on their weight even if they lack the manpower to reach ramming speed. Octavian fears direct engagement with these juggernauts, as clashes would easily shear off the prows of the lighter-weight Roman ships. Cleopatra's navy supports Antony's to the rear.

5 MORNING: HOURS OF WAITING

The fleets sit idle until midday, when the tides make the wings on the lines slowly drift, creating gaps in each line. Thanks to a defector, Octavian knows Antony's strategies; his ships stay out of range, while he orders his right wing to row backwards, to lure Antony into deeper water.

6 THE SHIPS ENGAGE

As the fleets come within range of each other, Octavian's ships sail in quickly to fire volleys of darts at the enemy, then row away with as much speed as possible. Antony's ships have iron grappling hooks that can be launched and used to pull the boats together.

7 MISSILE FIRE

Wicker shields protect Antony's men from the blows of spears and poles, and the Romans fire flaming missiles into his ships. He retaliates by ordering his catapults to fire on the Romans, from high up in wooden towers on the ships.

8 CLEOPATRA CHANGES THE PLAN

In the heat of battle, Cleopatra's ships suddenly cruise forward, heading towards the Roman lines. She soon gives the signal to retreat, which Antony doesn't see. In the confusion, Antony thinks the Egyptians are panicking due to defeat; he abandons his fleet to join her.

9 ANTONY'S NAVY FIERCELY BATTLES ON

Unaware that their general has left, Antony's forces fiercely continue the battle, firing missiles and clashing with swords as the enemy boards their ships. Some boats are set on fire, others concede and throw their weapons overboard as they try to set sail to escape.

10 THE LEADERLESS SURRENDER

For several hours Antony's fleet fight valiantly against Octavian, but unwillingly surrender after a sudden gale batters the ships. 300 ships are captured or sunk and 5,000 men lost. The remaining generals surrender that evening when they realise Antony really has abandoned them.

"SOME BOATS ARE SET ON FIRE, OTHERS CONCEDE AND THROW THEIR WEAPONS OVERBOARD AS THEY TRY TO SET SAIL TO ESCAPE"

HEAD TO HEAD

At the Battle of the Nile in 1798, the Royal Navy's HMS Bellerophon exchanged broadsides with the massive French flagship L'Orient

L'ORIENT

YEARS IN OPERATION: 7 LOYALTY: FRANCE

WEIGHT AND DIMENSIONS

At 5,095 tons in weight, 213 feet (65 metres) in length, and 53 feet (16.24 metres) in breadth, L'Orient was three times heavier than Bellerophon and 50 per cent longer and wider.

CREW

L'Orient carried 1,079 crewmen, far outnumbering the Bellerophon. However, many of the experienced officers in the French Navy had been executed during the revolution, taking with them their skills at sea and command acumen.

TACTICS

The French commander François-Paul Brueys d'Aigalliers positioned his fleet defensively, with its back to Aboukir Bay. Under the cover of darkness, Nelson split his fleet into two divisions and slipped one between the French line and the shore.

FIREPOWER

A triple-decker, L'Orient's 120 cannons outgunned each British ship at the Battle of the Nile. The 32 cannons on the lowest of its three gun decks fired massive 36-pound shots.

GUNNERY

L'Orient's cannons devastated Bellerophon's masts and upper decks within minutes, but Bellerophon started uncontrollable fires on L'Orient's upper deck.

TOTAL



THE MIGHTY L'ORIENT, A SHIP OF MANY NAMES AND FEW BATTLES

Laid down at Toulon in 1791 with the princely name of Dauphin Royal and launched in 1792 under the revolutionary name Sans-Culotte, L'Orient gained its final name in 1795 after another twist of French politics. Later that year, Rear-Admiral Pierre Martin, a Canadian-born veteran of the American War of Independence, chose L'Orient as his flagship at the Battle of Genoa, against a larger British-Neapolitan fleet under Vice-Admiral William Hotham. Late in the afternoon, L'Orient engaged the British as they attacked the French rear, but that night L'Orient got lost, and played no further part in the French defeat. In 1798, L'Orient was the flagship of Napoleon's invasion of Egypt.

Left: Admiral François-Paul Brueys d'Aigalliers, commander of the French fleet

Below: The Destruction Of L'Orient, by Mather Brown



HMS BELLEROPHON

YEARS IN OPERATION: 12
LOYALTY: BRITISH

WEIGHT AND DIMENSIONS

Bellerophon was dwarfed by L'Orient, at only 1,612 tons in weight, 168 feet (51.2 metres) in length and 46 feet (14.3 metres) in breadth.

CREW

Henry d'Esterre Darby's complement of 550 crewmen numbered roughly half of L'Orient's 1,079, but their superior discipline and gunnery allowed Bellerophon to strike a fatal blow against the larger L'Orient.

FIREPOWER

A 'seventy-four', Bellerophon was lightly armed compared to L'Orient. It had 28 32-pounder cannons on the lower gun deck, 28 18-pounders on the upper gun deck, 14 nine-pounders on the quarterdeck and four nine-pounders on the forecastle, 74 in all.

TACTICS

Bellerophon aimed for the centre of the French line and came to rest alongside L'Orient. Within an hour, L'Orient was on fire, Bellerophon was demasted and Captain Darby wounded.

GUNNERY

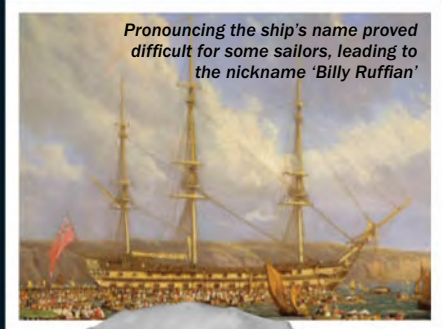
When tubs of paint caught fire on L'Orient's upper deck, Bellerophon's gunners aimed for the inferno. Several hours later, L'Orient exploded so violently that every ship in the battle, shocked by the destruction, stopped firing.

TOTAL



THE LEGEND OF 'BILLY RUFFIAN'

This was not the first time that Bellerophon had attacked a much larger French warship. In 1794, Bellerophon was part of Lord Howe's Channel fleet victory at the Glorious First of June, the largest fleet action of the war. The first ship to engage the French, Bellerophon exchanged broadsides at close range with the 100-gun *Révolutionnaire* and was badly damaged. Temporarily repaired, Bellerophon was damaged again in the next day's fighting. At Trafalgar, Bellerophon's rigging became entangled with a French seventy-four, *L'Aigle*, and Captain Cooke was killed by musket fire. On the lower decks, gun crews fought with grenades and melee weapons. After an hour, *L'Aigle* withdrew.



When Napoleon finally surrendered, he did so aboard the Bellerophon

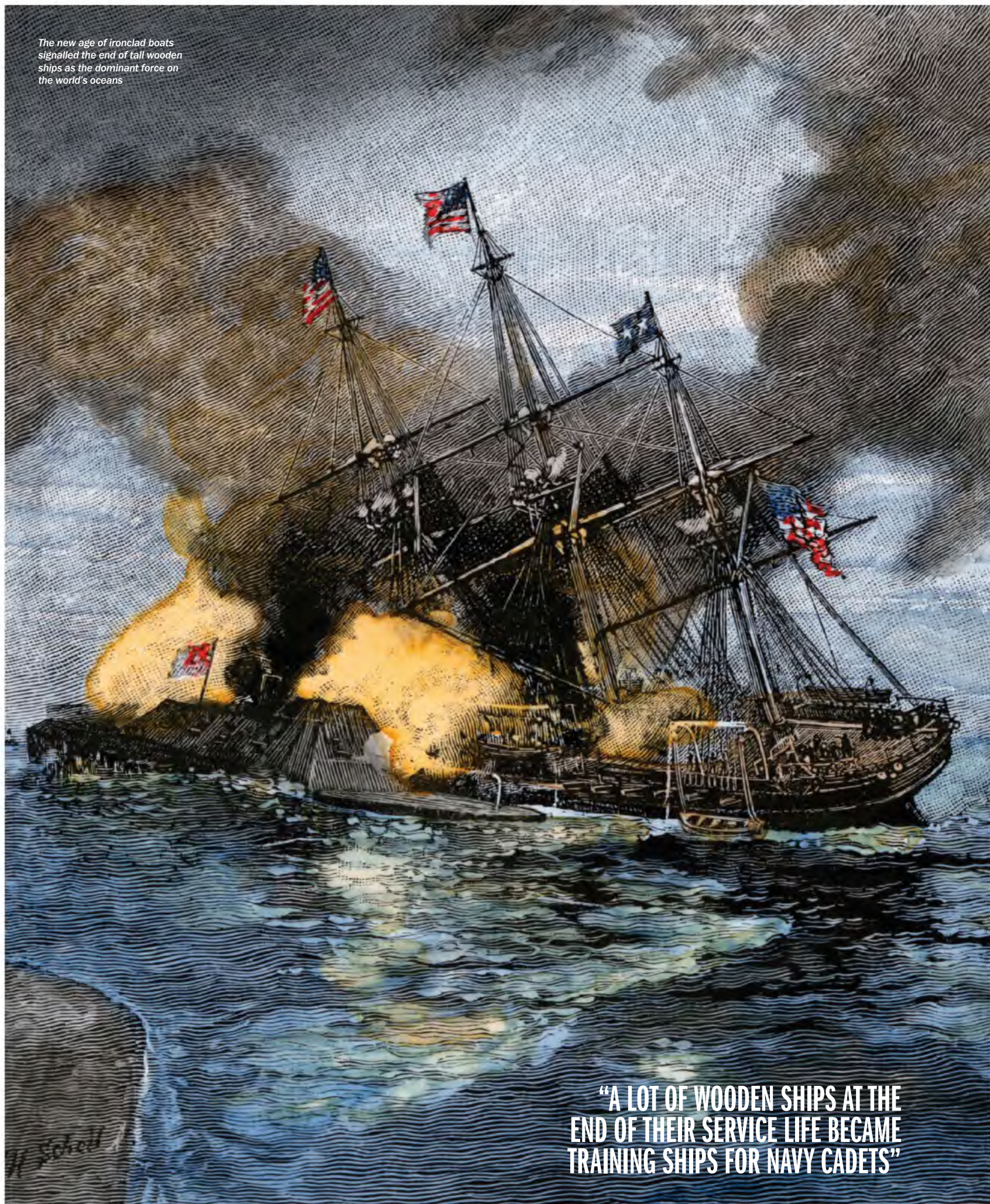


Images: Alamy, Corbis

Admiral Henry d'Esterre Darby, captain of HMS Bellerophon

BIRTH OF THE IRONCLADS

*The new age of ironclad boats
signalled the end of tall wooden
ships as the dominant force on
the world's oceans*



**"A LOT OF WOODEN SHIPS AT THE
END OF THEIR SERVICE LIFE BECAME
TRAINING SHIPS FOR NAVY CADETS"**



Maurice Hutty is the chairman of the HMS Warrior Association and has been a volunteer guide aboard the vessel since 1993

THE BIRTH OF IRONCLADS

As cannonballs from coastal batteries began to destroy wooden navies, iron was introduced to turn the tide

WHY AND HOW DID IRON REPLACE WOOD, AND STEAM REPLACE SAIL ON THE WORLD'S WARSHIPS?

Iron started to be used in warship construction in the 1700s in the form of joint brackets. Timber was getting very short in Britain's forests and demand was struggling to keep up with supply for a small country with a very large navy.

Steam replacing sail was a natural progression once the steam engine had been invented. First designed to pump water out of mines in the early 1700s, steam engines found their way on to ships in the 1820s. The mine engines used a large revolving wheel with buckets to move the water, so when engines were placed on ships, the buckets gave way to planks of wood to propel the ship. Although naval officers initially disliked steam engines, they soon found their ships were now free of the restrictions of tide and wind direction, giving them a freedom they never had before.

Steel ship building was not possible before the 1870s, as molten iron contained a large

carbon content, but engineer and scientist Henry Bessemer developed a way to remove the carbon by blowing compressed air into the molten iron.

WHO INVENTED THE IRONCLAD WARSHIP?

During the Crimean War, both the French and English ships suffered casualties from bombardments by shore batteries. The French responded by producing some small boats made of wood but protected by iron plates. Cannonballs could not penetrate the ships' iron sides, making the designers realise that the shockwave produced when a cannonball hit the iron side of the ship was absorbed by the wood and no damage was done. The era of the ironclad was born.

HOW DID NAVAL BATTLES CHANGE WITH THESE NEW SHIPS? COULD THEY HOLD BIGGER AND HEAVIER NAVAL GUNS?

The ironclads all used roughly the same thickness of armour: 11.5 centimetres (4.5 inches) of iron

backed by 46 centimetres (18 inches) of wood. The thickness of the iron was determined by the machinery available to manufacture it at that time. Ships could hold bigger and heavier guns but until stronger explosives than gunpowder became available, then there was no need for larger guns.

HOW IMPORTANT WAS THE CONSTRUCTION AND LAUNCH OF HMS WARRIOR TO MARITIME WARFARE?

Warrior was built with one purpose in mind, to repel France, one of the strongest military countries in the world. Plans to invade Britain by the French were put in place from 1856 and the ship was built to deter this threat. It could operate in any part of the world, so should any other nation have similar ideas, they knew they would have to overcome Warrior first.

WHICH COUNTRIES TOOK TO IRONCLAD SHIP PRODUCTION THE MOST?

Ironclads could only be built by countries with the ability to produce

the iron needed in great quantities. Britain was far ahead of other nations in this respect, and had by far the largest ironclad fleet in the world. However, the Royal Navy still kept a massive fleet of wooden ships until their life expired.

HOW MUCH OF A TURNING POINT WAS THE BATTLE OF HAMPTON ROADS?

The Battle of Hampton Roads in the American Civil War goes down in the history books as the first clash between two ironclads. The Union Monitor engaged the Confederate ship Virginia in a battle that lasted four hours. Virginia was hit 50 times while Monitor, a much smaller ship that lay much lower in the water, was hit 21 times. The battle ended when the Monitor's captain was temporarily blinded and broke his ship off from the conflict. Virginia's captain thought that Monitor was in retreat and did not pursue, ending the first ironclad battle in a draw.

DID THE FIRST IRONCLAD SHIPS HAVE ANY MECHANICAL ISSUES?

Warrior, the first of the British ironclads, was a prototype, so onboard many things were not quite right. Steering the ship was a nightmare, as 9,000 tons of ship was steered by a piece of rope that was constantly stretched and then parted. The anchor cables, now made of chain, were stored in the centre of the ship and could be moved by man power only. Most of those faults were rectified by HMS Achilles, which was launched in 1864.

WHAT HAPPENED TO WOODEN SAIL SHIPS?

Wooden warships were still being built at the same time that ironclads were. The Admiralty had about 20 years' supply of timber to get rid of and a lot of wooden ships at the end of their service life became training ships for navy cadets. Wooden ships with engines were still used all over the world for transporting troops. Many wooden ships were broken up though, and the recycled wood was sold to builders, explaining why many old public houses have old ship beams in their structure.

The first battle between two ironclad ships at the 1862 Battle of Hampton Roads ushered in a new era of naval warfare





THE UNSUNG HEROES OF THE BATTLE OF BRITAIN



303 SQUADRON

WORDS DAVID SMITH



Among the deadliest but least celebrated pilots to fight the Luftwaffe during Britain's time of need were Poland's fighter aces. This is the story of their finest hour

August 1940: for three weeks, the men of 303 Squadron have been forced to wait while the German war machine readies itself to smash the last resistance in Western Europe. Not that they have been idle – pilots and ground crew have been training hard to operate their Hurricane Mk Is, and they are nearly ready to renew a fight that, for

them, began in their homeland of Poland and continued in France.

Everywhere the Poles have been, the Germans have proved inescapable, forcing them to find a new base from which to continue their struggle. The Battle of Britain may have been raging for weeks, but the men of 303 Squadron have already been fighting for a year.



**"THE BATTLE OF BRITAIN MAY HAVE BEEN RAGING
FOR WEEKS, BUT THE MEN OF 303 SQUADRON
HAVE ALREADY BEEN FIGHTING FOR A YEAR"**

Rising from Poland's ashes

The Polish Air Force (PAF) was reorganised just prior to the outbreak of hostilities in September 1939, with the bulk of the eskadras (escadrilles or flights, which were grouped together into squadrons) being allocated to Polish land forces. The exception was the Brygada Poscigowa, the 'Pursuit Brigade', which was tasked with defending Warsaw.

Despite the technological inferiority of its machines, the PAF downed more than 100 German planes and Pilot Officer Stanisław Skalski of 142 Eskadra became the first Allied 'ace' of the war, downing four German planes and sharing in the destruction of a fifth.

As the Polish armed forces fell back before the German advance, they could count on the forests and marshland in eastern Poland to slow their enemy down on the ground, while new planes (including Hurricanes) were expected to arrive via neutral Romania at any moment to match the Germans in the air. Such hope was dashed on 17 September, when the Soviet Union invaded Poland from the east. The next day, the remaining PAF forces were ordered to make their way as best they could to Romania or Hungary. It was to be just the first step of a long journey. From their temporary havens, the Polish pilots headed for France, mostly by ship (the few P.11s that had been flown to Romania were left there), and quickly started preparations for the next stage of their war.

Some Polish forces, perhaps recognising the likelihood of German success in France, headed immediately for Britain. However, most, pilots and air crew alike, started frantic retraining on the Morane-Saulnier MS.406 – a plane with a passing resemblance to the Hurricanes the men of 303 Squadron would fly with such distinction during the Battle of Britain.

A total of 130 Polish pilots took part in the Battle of France, with many serving in the

'Montpelier Squadron' (so called because that was where they had undertaken their conversion courses for the MS.406), which was divided between several French formations.

The willingness of the Polish to fight wherever and whenever was exemplified by a squadron that trained in France in order to fight against the Russians in Finland. Before they could be transferred, however, the Finns made their separate peace with the Soviet Union on 12 March 1940. Even after being asked to fly the inferior Caudron-Renault C.714 Cyclone, a seriously underpowered plane with a wooden frame, the Polish pilots stubbornly persevered. French authorities declared the plane unfit for combat after early negative feedback, but with no alternatives available, the pilots flew on.

Of course, the end of this chapter came quickly. Having been credited with the destruction of 60 German planes (at a cost of 13 pilots killed), the Polish airmen were on the move once more after France surrendered. Scattering in any planes they could get their hands on, or making their way to French ports, the men headed for Marseilles, La Rochelle, North Africa and Gibraltar. Their routes may have been varied, but their destination was always the same – as far as they were concerned, there was simply nowhere else to go.

The island of last hope

The Polish airmen had put up a brave fight in their homeland and in France, and they could have headed for the USA or Canada with pride intact. But only one nation still offered the prospect of continued combat operations against the Germans.

Despite this, Britain was a very different experience for the Poles. Where they had enjoyed their own 'special relationship' with the French, which meant that most of them spoke excellent French, they had little or no



Below: Members of 303 Squadron after returning from a sortie in October 1940

Top: This Polish propaganda poster told the country its air force was 'strong, serried, ready'
Right: A 1939 British tabloid reports on the Polish Air Force bombing Berlin



"SOME POLISH FORCES, PERHAPS RECOGNISING THE LIKELIHOOD OF GERMAN SUCCESS IN FRANCE, HEADED IMMEDIATELY FOR BRITAIN"

English. The French method of spreading Polish pilots through existing squadrons would be problematic in the RAF, but that was how the first men to arrive made their contributions.

Some of those who had moved on to Britain soon after reaching France were already in training. Fighter aces were even prepared to take up posts in bomber squadrons, so keen were they to keep fighting. This enthusiasm led to one of the many myths about the Polish Air Force – that their personnel were brave but reckless, and that they paid a heavy price for it.

The Polish fighters were indeed brave, and their preferred tactic – closing to extremely close range before opening fire on an enemy – appeared to the British to be quixotic.

It would take some time for this misapprehension to be remedied and for the Polish airmen to be recognised for what they were – some of the best pilots available to the RAF. Their experience was valued from the start, but it was with British units that they made their first contributions.

Of course, their support was badly needed. Britain, anticipating a major air confrontation with Germany, had been investing heavily in its air force since 1937, but when war came, it did not follow the expected pattern. German military planning was not based on massive strikes from the air, but on tight co-operation between air and land forces. The nightmare of bombing raids against cities was not part of the plan – it was only to be considered in retaliation for similar raids. Britain's army was small at the outbreak of war and was unable to make a difference on the continent.

The RAF, which had envisioned flying over home ground with the benefit of radar, was much less effective when shorn of these two major advantages. No fewer than 477 fighters and 284 pilots were lost in France. Fighter Command's Sir Hugh Dowding begged the War Cabinet to stop sending his precious planes over the Channel. Spitfires were not committed until the evacuation at Dunkirk, but even so the British lost 155 of their premier aircraft.

However, the war was about to enter a phase that the British had been planning for – a defensive struggle to prevent an invasion. On 18 June, Winston Churchill christened the battle to come when he declared: "The Battle of France is over. I expect the Battle of Britain is about to begin."

Polish fliers were airborne with RAF squadrons as early as July 1940, with the first kill credited to Flying Officer Antoni Ostowicz on 19 July, when in action with 145 Squadron. In one of war's many cruel ironies, Ostowicz was also the first Polish pilot to be killed in the Battle of Britain. Nearly 100 Polish pilots flew with 27 fighter squadrons, moving from one unit to another as needed. They would undoubtedly have been willing to continue in this manner, but it was quickly realised that they could be more effective in dedicated Polish squadrons, where the language barrier and the differences in operational doctrine would not be problems.

THE PURSUIT BRIGADE

HOW THE POLISH AIR FORCE TOOK THE FIRST FIGHT TO THE LUFTWAFFE IN 1939

One of the myths of the war, propagated by the Nazis, was that the Polish Air Force had been destroyed on the ground in the first two days of the German invasion. In fact, the Poles had known what was coming and had moved their fighters to new bases before the Nazis struck. The problem was that those fighters were badly outperformed by their German counterparts and even struggled to compete with bombers.

The Pursuit Brigade (Brygada Poscigowa) was comprised of two squadrons responsible for defending Warsaw. Three units, 113, 114 and 123 Eskadras, made up IV/1 Dywizjon (Squadron), based about 11 kilometres north of Warsaw.

Operating from a base about five kilometres north east of Warsaw, III/1 Dywizjon comprised 111 and 112 Eskadras. The famed 303 Squadron would largely be made up of pilots from this unit. Most of the pilots in the Pursuit Brigade flew PZL P.11 fighter aircraft, although 123 Eskadra had to make do with P.7s. Less than a decade old when the war opened, the P.11 had nevertheless been rendered nearly obsolete by modern developments in fighter technology. It had a distinctly old-world look, with its open cockpit and fixed undercarriage.

Unable to catch German planes from behind (its top speed was just 242 miles per hour), P.11 pilots were forced to tackle them head-on, and the relative weakness of the P.11 armament (two or four 7.92mm machine guns) meant that they had to close to the sort of ranges that would have made an RAF pilot blanche to have a chance of downing an enemy.

Seriously outnumbered as well, it is no surprise that the PAF lost about 85 per cent of its aircraft during Poland's brief war, but it also claimed more than 100 kills, and the experience gained by the pilots was to prove invaluable in France and Britain.

"THE P.11 HAD BEEN RENDERED NEARLY OBSOLETE BY MODERN DEVELOPMENTS IN FIGHTER TECHNOLOGY"



A Stuka dive-bomber claimed the first kill of the war in Poland, downing a P.11 as it was taking off



Above: The PZL P.11c may have been slow and lightly armed, but it was a tough plane with an all-metal construction



SCRAMBLE!

WHEN THE CALL CAME, PILOTS WERE RELYING ON THEIR GROUND CREWS

During the daily intensity of the ongoing struggle with the Luftwaffe, the RAF's ground crews were just as important as the pilots in the air. It was their job to ensure the planes were refuelled, repaired and re-loaded for take-off when the order to 'scramble' was given. Ground crews were also tasked with clearing runways of any debris from crash-landings. Pilots trying to steer damaged aircraft back to base as best they could often left a wake of carnage behind them.

A group of pilots rush to their planes as the order to take off is sounded



Giving the Poles their own squadrons would also enable them to keep alive the unit histories that meant so much to soldiers, sailors and airmen. It meant that 303 Squadron, the fourth Polish squadron to be formed, was able to resurrect the 'City of Warsaw' name that it had carried when part of the Pursuit Brigade. The squadron's roots, however, ran even deeper than this.

Rise of the Kosciuszko squadron

Following World War I, Poland emerged from more than 100 years of partition to be an independent nation once more. The Polish-Bolshevik War, however, threatened to end this almost immediately, with Lenin intent on absorbing the country within the Soviet Union. Help for Poland came from many quarters, but perhaps the most remarkable was the squadron of American volunteer pilots formed by Merian Cooper. Taking their place in the Polish Air Service as the 7th Squadron, they were nicknamed the 'Kosciuszko Squadron', after a Polish general that had served with the Americans during their own War of Independence. The squadron's badge, designed by American pilot Elliott Chess, combined American and Polish elements such as red and white stripes and 13 blue stars (representing the original 13 American states) into an eye-catching emblem.

Following the distinguished service of the American pilots (three of whom died during the war), the Kosciuszko name was taken on by 111 Eskadra, part of the Pursuit Brigade, which in turn provided the basis for 303 Squadron.

"IT WOULD TAKE SOME TIME FOR THIS MISAPPREHENSION TO BE REMEDIED AND FOR THE POLISH AIRMEN TO BE RECOGNISED FOR WHAT THEY WERE – SOME OF THE BEST PILOTS AVAILABLE TO THE RAF"

It was an illustrious history, based on the willingness of foreign pilots to fly in another nation's air force. It is difficult to imagine a more fitting background for the men who started training in Britain in August 1940.

The men of 303 Squadron were immortalised in a book by Arkady Fiedler. While many unit histories are written long after the events, with aging veterans recalling their days of service, *303 Squadron* is a very different text. Written during the Battle of Britain, it has an immediacy that instantly grips the reader. Fiedler was an emotive and emotional writer, but even the occasionally overblown rhetoric cannot alter the fact that he offered a glimpse inside the workings of a fighter squadron under the highest possible stress, and inside the workings of the fighter pilot's mind as well.

"The more-sensitive fighter pilots," Fiedler wrote, "clearly feel that their nerve ends reach

to the tips of their aircraft's wings. They feel them physically and emotionally. If an enemy damages one of their wings, they feel the shock as if they had been wounded themselves."

Fiedler also debunked another of the myths surrounding the Polish airmen – that they were consumed with rage when in the air. The young Polish pilots were, of course, hugely motivated by experiences in their home country, but in the air they were calm; their minds blank as instinct took over and they experienced "a sort of mental blackout." Only in this state could they hope to react quickly enough to survive.

The men of 303 Squadron did not have to wait for their training to officially end before taking the fight to the Germans. On 31 August, the last day of their conversion course to fly Hurricanes, they were 'vectored' onto a formation of German planes. Bombers and their fighter escort were returning after a raid when 303 Squadron found them. Five kills were made quickly, while a sixth was added by Lieutenant Zdzisław Henneberg after he had patiently followed a group of four retreating planes. Six kills, all Messerschmitt Bf 109s, had announced the arrival of the squadron in no uncertain terms, and their admission to the official strength of the RAF was timely – German strategy had shifted to target Fighter Command specifically.

The Luftwaffe attacks

Just as the shift to an air-based strategy suited the British, it caused problems for the Germans, who were used to combining their air and ground forces – independent



Hawker Hurricanes
fly in formation

Feric (far left) with other members of 303 Squadron at RAF Northolt



“FOLLOWING THE BATTLE OF BRITAIN, FERIC FOUGHT ON IN SPITFIRES, DESTROYING ONE MORE BF 109”

THE ULTIMATE SACRIFICE

MIROSLAW FERIC SURVIVED INVASION, EVACUATION AND THE BATTLE OF BRITAIN BEFORE FINALLY LAYING DOWN HIS LIFE IN AN RAF UNIFORM

Born in 1915 near Sarajevo, Ferić moved to Poland in 1919 and fought as part of the Pursuit Brigade during the German invasion of 1939. He shared in two kills, but also only narrowly escaped death when forced to take to his parachute after another sortie. He fled to Romania on 17 September, and then on to France, where he fought under Zdzisław Krasnodebski, who was also to become his commanding officer in 303 Squadron.

As well as destroying six German planes during the Battle of Britain (four Bf 109s, a Bf 110 and an He 111) he also somehow found time to set up a squadron diary, the *303 Squadron Chronicle*, which has proved invaluable for students of the unit.

Following the Battle of Britain, Ferić fought on in Spitfires, destroying one more Bf 109 and damaging another, before he was killed in an accident on 14 February 1942.

Awarded the Silver Cross of the Virtuti Militari, as well as the Cross of Valour (with two bars) and the British DFC, Ferić is buried in Northwood Cemetery in Middlesex. His name lives on as both a street name and a primary school name in Poland.

air operations presented a new challenge. Famously, the British benefited from radar technology, but a far more prosaic system of ground-based observers was also available to Fighter Command and denied (obviously) to the Germans.

German tactics initially involved flights of Bf 110s (twin-engine heavy fighters), which were supposed to lure in British fighter units and leave the way clear for the bombers and their single-seater fighter escorts. However, the 110s suffered so badly they required their own escorts, nullifying their effectiveness. The ultimate symbol of the German way of warfare, the Stuka dive-bomber, also proved unsuitable for a role in the Battle of Britain. German bombers, meanwhile, especially the Junkers Ju 88, were good planes, but their payloads were small (the Ju 88 could carry 4,000 pounds of bombs, while the Lancaster would haul up to five times as much on its missions).

German high command appeared unsure over what strategy to pursue, targeting coastal defences, shipping and cities as well as fighter bases, but the overall aim was consistent, at least as far as the Luftwaffe itself was concerned – it was aiming to knock out Fighter Command. German bombers were initially expected to manage with only small escorts, as the fighters engaged their RAF counterparts. The RAF, however, prioritised attacks on the bomber formations, forcing the Germans to unite bomber with fighter into the sort of mixed formations that have become symbolic of the battle. The formations presented a big target to the pilots of 303 Squadron when they burst onto the scene on 31 August, and they lost no time in taking advantage.

The Regia aeronautica, the Italian air force, also took part in the Battle of Britain



Wonderful madmen

The successes of 303 Squadron during the Battle of Britain were so remarkable that some began to question the accuracy of their figures. Was it really possible for a group of reckless Poles to be outperforming every other RAF squadron? The group captain at RAF Northolt, Stanley Vincent, wanted to be sure and accompanied the squadron on a sortie flown on 5 September. He could hardly have chosen a better day. The nine Hurricanes that 303 Squadron could put in the air that day accounted for eight German planes to the loss of just one – and all their pilots returned safely. Vincent was amazed and delighted, calling his Poles ‘wonderful madmen’.

The dash and courage of the Polish squadron could not be denied, but following one of its greatest days, it then suffered through one of its most costly on 6 September. One pilot was killed, five Hurricanes destroyed and Major Zdzisław Krasnodebski suffered severe facial burns after his plane was hit. Despite the terrible losses, the day was a triumph for the squadron – a defensive action that saw its nine Hurricanes occupy huge numbers of German fighters and help to break up a major assault.

By stripping a massive bomber formation of its cover, 303 Squadron had allowed other units to get at the bombers themselves. Being a fighter pilot wasn't always about attacking, as Fiedler realised: “A fighter pilot's skill is displayed not only in the offensive, but also in the defensive role,” he wrote. “Above all, in the defensive role. While every soldier is easily able to take cover from enemy fire, a fighter pilot at an altitude of 20,000 feet has nothing but empty sky around him. Only lightning



The mascot of 303 Squadron, Misia, sits atop the 178th German aircraft destroyed by the unit

“SOMETIMES THE MEN OF 303 SQUADRON ATTACKED, SOMETIMES THEY DEFENDED – ALWAYS THEY WERE PUSHED TO THE LIMIT”

manoeuvres and exceptional, superhuman presence of mind can save him.’

The Battle of Britain played out in this fashion. Sometimes the men of 303 Squadron attacked, sometimes they defended – always they were pushed to the limit. The unsung heroes of the squadron, the ground crews (memorably described by Fiedler as the “colourless roots of brilliant flowers”) allowed the pilots to be sure of at least one thing as they ran to their Hurricanes: the planes would

not let them down. Despite the almost constant action, the ground crews of 303 Squadron failed to put 12 planes into the air on just four occasions. It wasn't always the same 12 planes. It wasn't always the same 12 pilots. The battle took a terrible toll on both groups, but the squadron was handing out more punishment than it was taking.

12 Dorniers were shot down on 7 September for the loss of two Hurricanes, with other British squadrons accounting for 61 planes and anti-aircraft fire destroying another 28.

Then came a dizzying 15 minutes on 11 September – a quarter of an hour in which the squadron scored 17 kills when engaging an airborne armada of 60 bombers, 40 Bf 110s and 50 Bf 109s. The first section of 303 Squadron, three planes, bypassed the fighters and headed straight for the bomber formation. The second section held the German fighters at bay, allowing the third to also target the bombers. Finally, the fourth section joined in the holding action against the fighters.

It was arguably the squadron's finest hour, but it came at a cost. Ground crews at Biggin Hill watched in appalled fascination as Sergeant Stefan Wójtowicz fought alone against nine Bf 109s, shooting two down before inevitability caught up with him. Also dying that day was Arsen Cebrynski, killed by machine-gun fire from a German bomber. RAF losses on the day totalled 24 planes and 17 pilots as well as the two fatalities in 303 Squadron.

By 15 September, the day that is now commemorated as Battle of Britain Day, the toll on 303 Squadron had become almost too much to bear. Three sorties were flown, but the grinding reality of the near- ceaseless combat was made clear by the number of planes that took part in each: 12 Hurricanes took to the air in the first sortie, nine in the second and just four in the third. Despite this, the Polish ground crews had 12 Hurricanes ready for action by dawn the following day. The ‘wonderful madmen’ had a supporting cast every bit as important as they were.

HURRICANE MK I

LIVING IN THE SHADOW OF THE MORE ILLUSTRIOUS SPITFIRE, THE HURRICANE WAS ARGUABLY THE BACKBONE OF THE RAF DURING THE BATTLE OF BRITAIN

The Hurricane comprised 55 per cent of Fighter Command's single-seat fighter force during the Battle of Britain. It was not as fast as the Spitfire (325 miles per hour compared to over 350 miles per hour), but it made up for this by being a more robust machine. From mid-August, Hurricanes were encouraged to concentrate on attacking bomber formations, with Spitfires handling the fighter escorts.

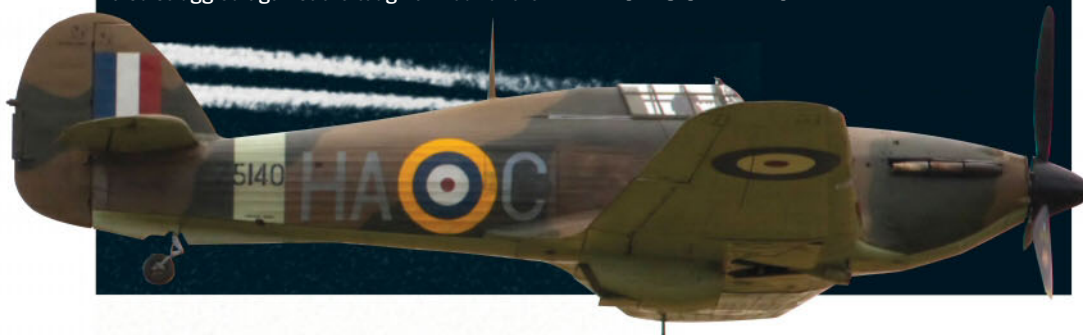
It's Achilles' heel, one that cost 303 Squadron's Zdzisław Krasnodebski dearly, was the lack of a self-sealing fuel tank. This defect was gradually rectified as the Battle of Britain progressed, but unmodified Hurricanes were prone to erupting in flames if hit in the fuselage-based tank.

The Hurricane's eight .303 machine guns also struggled against the tough armour of the

German fighters, and a mixture of incendiary and armour-piercing shells was used as well in an effort to compensate.

Propeller modifications were also introduced through the battle, adding to the Hurricane's ceiling and boosting general performance.

“IT WAS NOT AS FAST AS THE SPITFIRE, BUT IT MADE UP FOR THIS BY BEING A MORE ROBUST MACHINE”

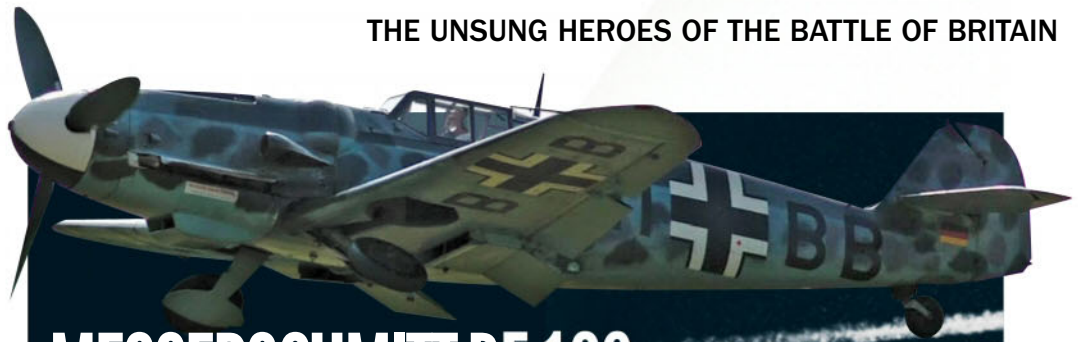


'I have fought a good fight'

The pilots of 303 Squadron were not exclusively Polish. Two British, one Canadian and one Slovakian also flew with the squadron, alongside one of the most intriguing characters of the entire war, the Czech pilot Josef František. Unable to control his instincts when in the air, he would leave his formation shortly after take-off and head for the Channel, where he would wait, alone, to ambush returning German planes after their missions. Perfecting this technique to the level of an art form (the Polish pilots called it the 'František method'), he scored 17 kills in the Battle of Britain to add to ten from the Battle of France, but his mental state gradually unwound due to the intense and unrelenting pressure and he eventually died in tragically needless circumstances, crashing his plane while executing a victory roll.

The squadron remains most famous, however, for its 37 Polish pilots, nine of whom died in the six weeks the squadron was operational during the battle. During those six weeks, they shot down 126 German planes, the highest total of any squadron in the RAF. No less an authority than Dowding at Fighter Command recognised the tremendous contribution made by the foreign pilots when he said: "Had it not been for the magnificent material contributed by the Polish squadrons and their unsurpassed gallantry, I hesitate to say that the outcome of the battle would have been the same."

The Polish pilots within the RAF had at times appeared to be almost unstoppable. Sergeant Antoni Głowacki, of 501 Squadron, downed five German planes on 28 August, becoming an 'ace in a day', while 303 Squadron's Witold Urbanowicz was known as the 'ace of aces', once shooting down nine German planes in three

**MESSERSCHMITT BF 109**

THE GERMANS' PREMIER FIGHTER IN THE BATTLE OF BRITAIN WAS A SUPERB ALL-ROUNDER AND A WORTHY OPPONENT FOR THE HURRICANE AND SPITFIRE

The Messerschmitt Bf 109 could make a credible claim to being the best fighter in the Battle of Britain.

The superior armament of the 109 (a pair of 20mm cannons were teamed with two 7.9mm machine-guns) gave them a hefty punch, while they enjoyed significant performance advantages over both Hurricanes and Spitfires at higher altitudes. Richard Overy has claimed that "if the Battle of Britain had been fought at 30,000 feet, the RAF would have lost it."

The 109 also benefitted from extensive armour, added prior to the Battle of Britain, which protected the pilot, but it could not turn as tightly as the British fighters and the Germans also suffered badly in the logistical department;

damaged planes often had to be returned to Germany for repair and aircraft production never hit targets. Only 775 109s were produced during the critical four-month period from June to September 1940.

"THE MESSERSCHMITT BF 109 COULD MAKE A CREDIBLE CLAIM TO BEING THE BEST FIGHTER IN THE BATTLE OF BRITAIN"

days of action at the end of September. He finished with 15 victories to become the most successful Polish pilot of the Battle of Britain.

Although the battle was not to officially end until 30 October, 303 Squadron's contribution came to a conclusion on the 11th of that month when the exhausted men were moved to RAF Leconfield for some badly needed respite. The proud squadron became a training unit for a

while, but its war was not over. It returned to action in 1941, this time in Spitfires.

The memorial to the Polish airmen who fought during World War II was unveiled at RAF Northolt in 1948, carrying the names of the 2,408 men who gave their lives and bearing a simple but poignant inscription: "I have fought a good fight, I have finished my course, I have kept the faith."

Front row from left, Polish flying ace Jan Zumbach, Wing Commander Stefan Witorzenc and Flight Lieutenant Zygmunt Bienkowski of 303 Squadron



303 SQUADRON

*In Hurricanes, 303 Squadron
engaged German bombers while
Spitfires took on the fighters*



**"HAD IT NOT BEEN FOR THE MAGNIFICENT MATERIAL
CONTRIBUTED BY THE POLISH SQUADRONS AND THEIR
UNSURPASSED GALLANTRY, I HESITATE TO SAY THAT THE
OUTCOME OF THE BATTLE WOULD HAVE BEEN THE SAME"**

AIR CHIEF MARSHAL HUGH DOWDING



Great Battles

WORDS WILL LAWRENCE

BATTLE OF NASEBY

Parliament's New Model Army wins the day during the decisive encounter of the English Civil War

Though Englishmen continued to fight Englishmen in the field and at siege throughout the course of the year, by mid-summer 1645 the outcome of the civil war was no longer in doubt. The Royalists and Parliamentarians met in battle on Saturday 14 June at Naseby parish in Northamptonshire and the decisive blow was struck.

The Roundhead victory was precipitated by a move to reform its martial structure, which gathered pace early in the year following the

removal of MPs from their military commands and their replacement with experienced, dedicated soldiers. The Self-denying Ordinance, as it was known, carried the notable exception of Oliver Cromwell, who had proved his own martial excellence at Marston Moor during the previous year and was permitted to retain his seat in the Commons while also taking the position of lieutenant general within the new structure.

The new system saw Parliament merge several existing armies into one centrally controlled unit consisting of ten regiments of cavalry, 12 of infantry and a regiment of dragoons. This new force, numbering more than 20,000 men, came to be known as the New Model Army.

It was placed under the command of Sir Thomas Fairfax and by the end of April it was ready to start what Parliament hoped would prove a conclusive campaign. During May, the New Model was ordered to

besiege King Charles's capital city of Oxford, and though Fairfax lacked the manpower and firepower to take the city outright, the move allowed the New Model's scattered regiments to unite into one army and would, Parliament hoped, lure the king into battle as he moved to Oxford's relief.

This painting depicts the moment when the Earl of Carnwath discourages the king from committing his reserve to the fray



NASEBY VILLAGE, NORTHAMPTONSHIRE, ENGLAND – SATURDAY 14 JUNE 1645

WHO

Parliament takes on King Charles I in the First Civil War's pivotal engagement.

WHAT

The newly formed New Model Army cuts its teeth in battle with the king's experienced Oxford Army.

WHERE

The armies meet near Naseby village in Northamptonshire.

WHEN

Saturday 14 June 1645.

WHY

With the civil war dragging on, Parliament is keen to execute a decisive end to hostilities by forcing the king into battle.

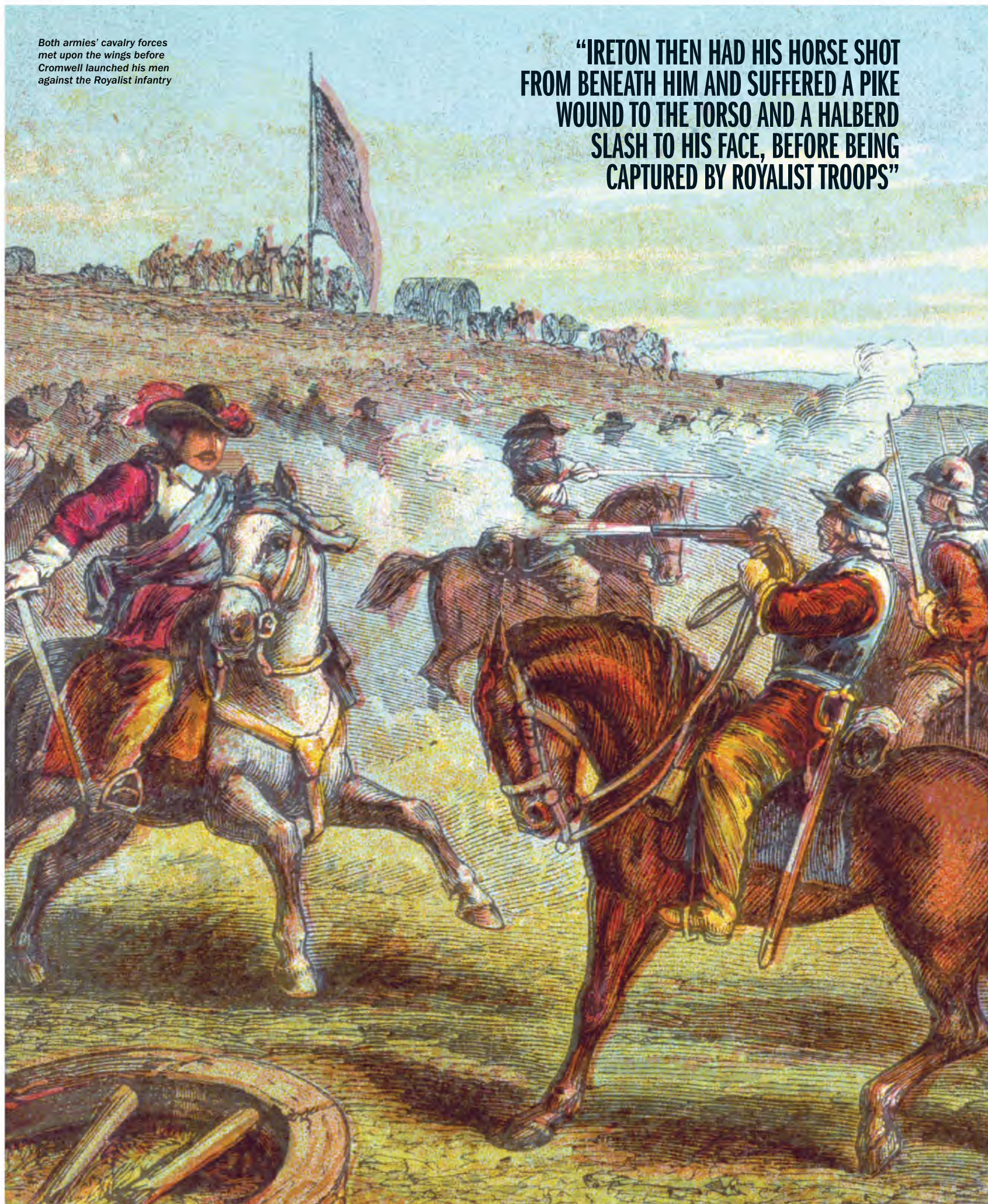
OUTCOME

Though boasting many superior regiments, the Royalists succumb to the New Model Army's greater numbers and, most significantly, its superior leadership.



Both armies' cavalry forces met upon the wings before Cromwell launched his men against the Royalist infantry

"IRETON THEN HAD HIS HORSE SHOT FROM BENEATH HIM AND SUFFERED A PIKE WOUND TO THE TORSO AND A HALBERD SLASH TO HIS FACE, BEFORE BEING CAPTURED BY ROYALIST TROOPS"



At this time, the king was campaigning in Cheshire with his experienced Oxford Army and he responded to the siege of his capital by moving south, sacking the Parliamentary stronghold of Leicester. Though this caused uproar in London, Parliament's strategy had worked – the king had moved south. Fairfax lifted the siege of Oxford and marched northwards in a bid to bring the king to battle. Scattered skirmishes on 12 and 13 June notified the king of Fairfax's close proximity and Charles, ignoring advice to move north, turned to offer battle with his numerically inferior, though battle-hardened, force.

After scouting the countryside and jockeying for position, the armies deployed during the morning of 14 June on an elevated plateau crisscrossed by small hills and vales; much of the area was unenclosed and therefore ideal for a showdown. The Roundheads formed up north of Naseby village atop Mill Hill and upon its northern slope, while the Royalists deployed about a mile further north on the south-facing slope of Dust Hill. A shallow valley called Broad Moor ran between the two positions with a parish boundary, known as Sulby Hedge, running along the battlefield's western rim.

The battle begins

The armies formed in conventional array, with the infantry placed centrally and the cavalry massing on the wings. Major-General Lord Astley commanded the Royalist infantry in the centre, and Sir Marmaduke Langdale took command of the cavalry on the army's left. The cavalry on the right were placed under Prince Maurice, though his elder brother and military superior the young gallant Prince Rupert moved with him, positioning squads of musketeers among his cavalry units.

The Parliamentary infantry, meanwhile, came under the control of Major-General Skippon, while Commissary-General Ireton commanded the cavalry on the Roundhead left, and Cromwell's formidable troop of horsemen took the right. A 'forlorn hope' of 300 musketeers stood in front of the army to counter any early Royalist movements, though they were ordered to withdraw if placed in peril. How they fared in the battle remains unknown. The reserves and the baggage trains took their positions in the rear of each army.

The opening move came on the Parliamentary left at the battlefield's western edge, where the New Model's regiment of dragoons (musket-armed horsemen) under the leadership of Colonel John Okey scurried forward to take advanced positions along Sulby Hedge so that they could fire into the flanks of the cavalry stationed on the Royalist right. Not long afterwards, at about 10am, the Royalist army began its advance, perhaps nudged into action by Okey's dragoons firing into their flank.

OPPOSING FORCES

THE KING LEADERS

King Charles I, Prince Rupert, Prince Maurice, Sir Langdale, Lord Astley

INFANTRY

6,000

CAVALRY

5,500

GAME CHANGERS

Prince Rupert's cavalier horsemen had many experienced warriors among its ranks

PARLIAMENT LEADERS

Sir Thomas Fairfax, Oliver Cromwell, Henry Ireton, Philip Skippon

INFANTRY

7,000

CAVALRY

8,000, including a regiment of dragoons

GAME CHANGERS

Cromwell's mounted 'Ironsides' were well-disciplined and vigorous horsemen

Sources differ wildly on the numbers involved and even modern historians disagree. The figures cited are research-based estimates.

POT HELMET

Three bars crossing the face were designed to deflect sword strokes.

COAT

Troopers often wore simple woolen coats under armour.

SABRE

As well as firearms, mounted troops carried swords for close combat.

CUIRRASS

Each plate would be shot with a pistol, to test its strength.

While suffering casualties from the heavy musket fire, Rupert and Maurice's cavalry charged uphill to meet Ireton's on the Parliamentary left. Here, the Royalist charge proved a success in part, with the extreme left of Ireton's force buckling under the onslaught and losing several of their guns. Their leader, Colonel John Butler, also suffered serious wounds. The dragoons, however, continued to pepper the Royalist cavalry and Okey wrote: "Had not we by God's providence been there, there had been but few of Colonel Butler's regiment left."

On the battlefield's western lip, the Parliamentarians managed to contain the Royalist charge, though Ireton then made a critical error. Believing that his men had fully stemmed the Royalist surge, he switched his attention to the infantry battle unfolding on his right, in the centre of the two armies, leading his own unit of cavalry to the relief of Skippon's infantry, which was being hard pressed by the Royalist infantry advance.

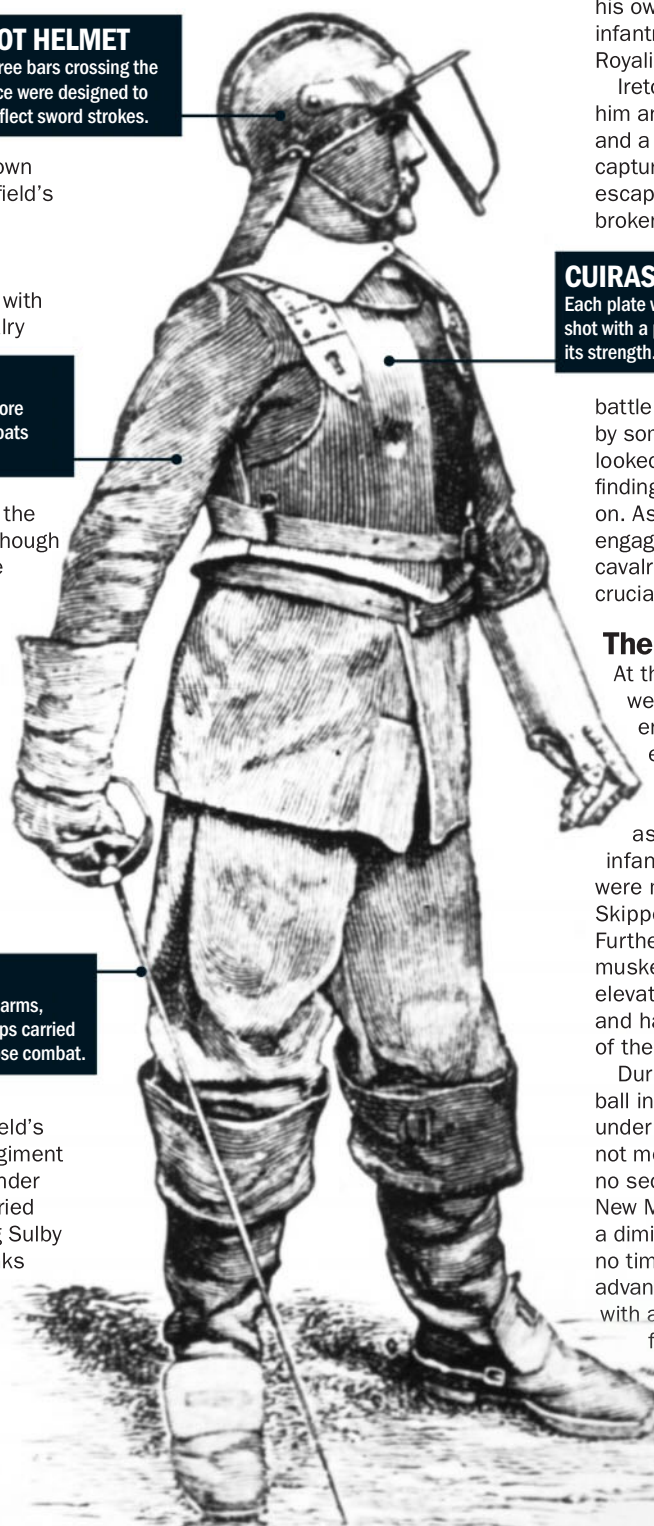
Ireton then had his horse shot from beneath him and suffered a pike wound to the torso and a halberd slash to his face, before being captured by Royalist troops. He was able to escape, but Rupert and Maurice had by then broken through the Parliamentary left wing,

much of which began to retreat from the battlefield. The Royalist cavalry then continued forward, pursuing Ireton's fleeing men and charging on to attack the battle train at the Roundhead rear. It is thought by some that part of the Royalist cavalry looked to attack the New Model infantry but, finding the throng so impenetrable, moved on. As at the Battle of Edgehill, the first major engagement in the civil war, vital Royalist cavalry units left the main battlefield at a crucial moment.

The Royalist success

At the outset, the Royalist infantry fared well, with Astley's three infantry brigades engaging Skippon's eight regiments and each side exchanging just a single volley of fire before coming together with pikes and firearms, which they wielded as clubs. Though the Parliamentary infantry outnumbered the Royalists, the latter were more experienced and had surprised Skippon's men with the speed of their assault. Furthermore, the Roundhead guns and muskets had mostly fired too high from their elevated position on the slopes of Mill Hill, and had therefore failed to check the progress of the Royalist surge.

During the charge, Skippon took a musket ball in the chest, "shot through the right side under the ribs, through armour and coat, but not mortal," according to one account. With no second-in-command to relay his orders, the New Model infantry suffered confusion and a diminishing morale. The Royalists, wasting no time upon seeing this, pressed home their advantage. Parliament's army began to waiver, with a section of the front line dissolving and falling back, some parts in chaos. At this stage, the Royalists looked set for a possible victory.



It was now that the New Model's commander-in-chief, General Fairfax, justified his position. Observing that Skippon's infantry units were faltering, he committed to the fray three regiments from his reserve, and at the same time the second line of Parliamentary infantry seemed to stabilise its position. The numerically inferior Royalists had failed to make the breakthrough and now fought within a wedge jammed into their enemy's front.

On the Royalist left, meanwhile, Langdale's Northern Horse had earlier moved to engage Cromwell's cavalry on the Parliamentary right. Charging uphill with their ranks broken by thick gorse and a sprawling set of rabbit warrens, the Royalist cavalry were here at a disadvantage and Cromwell unleashed the left wing of his Ironsides upon them.

The battle was fierce and the two sides fought in a constrained space, flanked by the warrens and gorse, which hampered easy movement. Cromwell's men here gained the upper hand and pushed back the Northern Horse, who turned and retired, seeking the help of one of the Royalist reserve units, Prince Rupert's infantry regiment, the Bluecoats. One of the Royalists' own accounts claimed that the Northern Horse was "routed without any handsome dispute."

The tide turns

The confined space in this area of the battlefield continued to play to Cromwell's advantage, preventing the right wing of his cavalry from charging off after the retiring cavaliers. This allowed Cromwell to hold much of his force in check and to then wheel them round and launch an assault on the left flank of the Royalist infantry, while the remainder pursued the remnants of Langdale's fleeing cavalry. As at Marston Moor, Cromwell brought his cavalry to bear against Royalist infantry and helped win the day.

Back in the centre, the infantry battle raged on. The ferocity of the Royalist assault had been checked and the tide began to turn with Astley's men feeling the pressure of the enemy's greater numbers. As the Royalist front line began to gradually disintegrate, Astley's second line regrouped on Broad Moor to stand against the New Model infantry.

Also regrouping, the New Model Army was now boosted by their reserve units, as well as by the survivors from Ireton's left-hand wing, including Okey's dragoons, who had charged the right of the Royalist infantry, flanking them entirely. At this stage, it seemed the die-hard Bluecoats had also entered the melee from the Royalist reserve.

Below: A 17th-century dragoons helmet



Great Battles

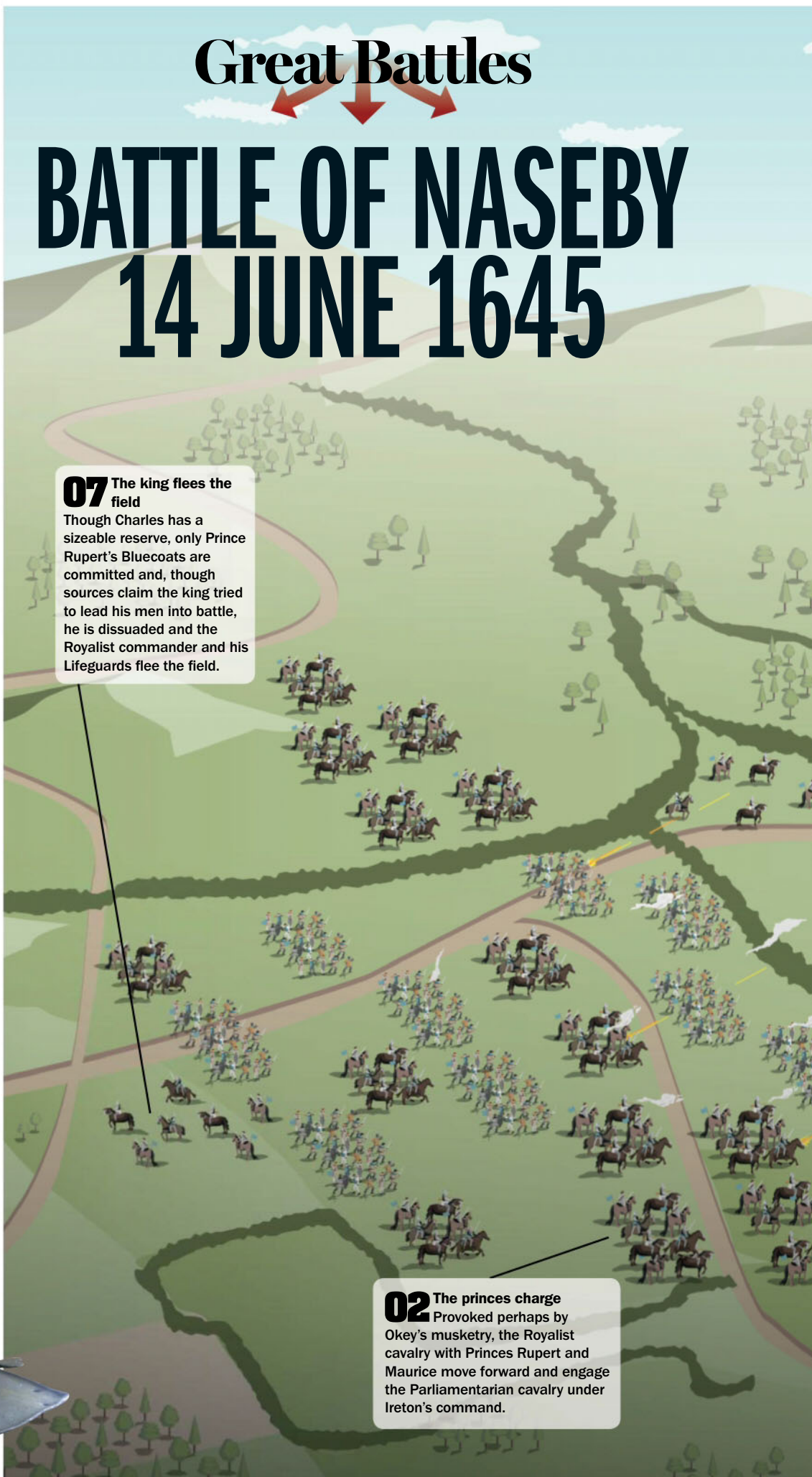
BATTLE OF NASEBY 14 JUNE 1645

07 The king flees the field

Though Charles has a sizeable reserve, only Prince Rupert's Bluecoats are committed and, though sources claim the king tried to lead his men into battle, he is dissuaded and the Royalist commander and his Lifeguards flee the field.

02 The princes charge

Provoked perhaps by Okey's musketry, the Royalist cavalry with Princes Rupert and Maurice move forward and engage the Parliamentary cavalry under Ireton's command.



05 Rupert's cavaliers charge the baggage train

Having broken through Ireton's cavalry but unable to move freely against the Roundhead infantry, the Royalist cavalry leaves the main battle to attack the baggage train, where they meet stiff resistance.

06 The tide turns

The Parliamentarian reserves bolster their flagging centre and begin to push the tiring Royalist infantry back. They're supported by Cromwell's cavalry, which engages the Royalist left, and by the survivors of Ireton's troops, who assail the Royalist right.

03 The infantry engage

At about 11am, the Royalist infantry moves against the New Model infantry and enjoys some early success, the terrain concentrating their assault against the Parliamentarian centre.

04 Northern Horse vs Ironsides

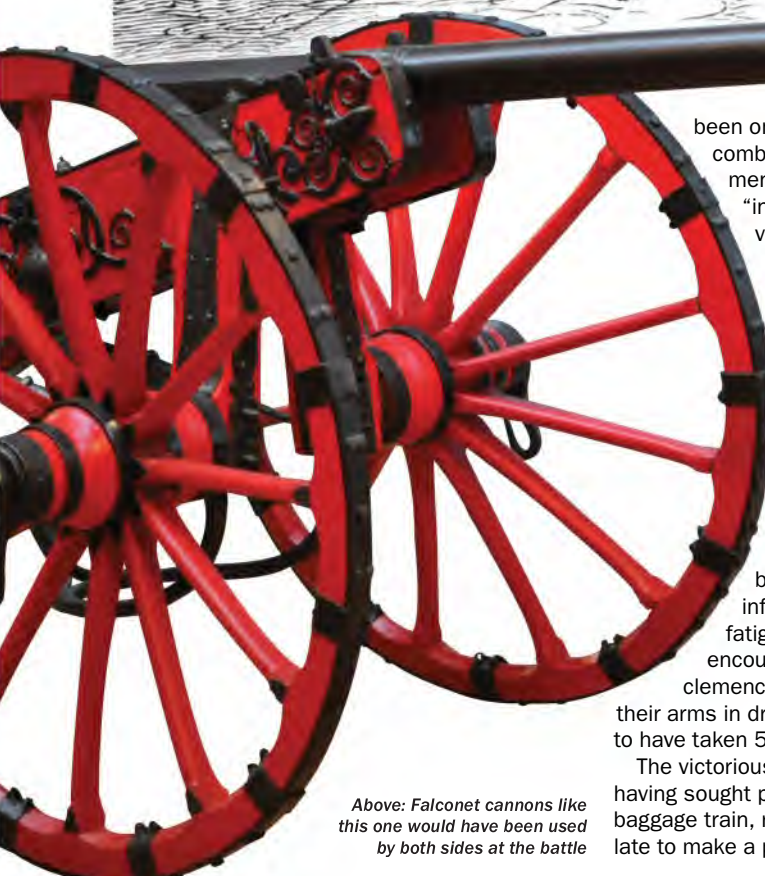
Possibly before the infantry engaged, Langdale's Royalist cavalry moves against Cromwell's, but by about 11.30am the left of the Parliamentarian front line forces them back. This frees up Cromwell to move against the left flank of the Royalist infantry.

01 The hostilities commence

At about 9.30am, Cromwell orders Colonel Okey to move his men up behind Sulby Hedges, the dragoons dismount and fire their muskets into the flank of the Royalist horse.



King Charles and his Lifeguards fled the field once his infantry units began their surrender



Above: Falconet cannons like this one would have been used by both sides at the battle

It is thought that Fairfax had been on the move throughout the combat, fighting with Cromwell's men against the Northern Horse, "in which the General charged valiantly and lost his headpiece," and then "charged bareheaded within push of pike," according to one witness. He encouraged his Lifeguard to assault an unbroken body of Royalist infantry, most likely the Bluecoats, who received glowing tributes even from Parliamentarian sources, such as their courage and vigour. And yet the New Model Army's superior numbers began to tell, and the Royalist infantry were suffering battle fatigue. Troops started to surrender, encouraged by the promise of clemency, and they were soon dropping their arms in droves. Okey's dragoons are said to have taken 500 prisoners alone.

The victorious cavalry on the Royalist right, having sought plunder among the enemy's baggage train, returned to the main combat too late to make a positive impact. Prince Rupert's

own journal claims that he had returned to the king as the cavalry engagement continued, but whatever the truth, he was unable to further influence the battle in a positive manner. As to why the king had failed to commit his reserve of cavalry – which may have numbered up to 1,000 men, including his Lifeguards, and could perhaps have engaged Cromwell's Ironsides before they smashed into his infantry – the sources give a reasonable account.

According to the king's adviser, Sir Edward Walker, Charles was set to lead his reserve into battle, but matters were thrown into disarray when the Earl of Carnwath grabbed the king's horse by the bridle, concerned by such reckless courage, and asked: "Will you go upon your death?" This movement towards the king's horse is thought to have turned the beast around, which led the troopers to believe that they were being wheeled away from the battle, and they "turned about and ran on the spur almost quarter of a mile," though some are thought to have returned in a bid to engage the enemy.

The Royalist surrender

Back on Broad Moor, the beleaguered Royalist infantry continued their surrender, though the archaeological evidence, if not the written sources, suggests that another large-scale and



bloody encounter took place two miles north, atop and around Wadborough Hill, where metal detectors have found a sizeable concentration of musket shot. Some historians have argued that the Royalist infantry posted to guard the baggage train and ammunition might have fallen back to this position during the closing stages of combat, but others point out that the vast concentration of metallic objects suggests a fray involving far greater numbers.

Whatever the case, the Royalist forces were now on the run and their baggage train and camp followers were left exposed. The Parliamentary troops set about slaying or mutilating a number of women, which included soldiers' wives as well as prostitutes. "The Irish women that Prince Rupert brought upon the field," wrote Fairfax's secretary, "our soldiers would grant no quarter to, about 100 slain of them, and most of the rest of the whores that attended that wicked army are marked in the face or nose, with a slash or cut." It has been pointed out that many of the 'Irish' women were most likely Welsh. It was with this murderous conclusion that the New Model Army claimed its greatest victory, and took the field at Naseby.

Though the camp followers were treated horribly, the Royalist army itself suffered



The battle site at Naseby is marked by small hills and vales and was largely unenclosed at the time

"THOUGH THE EXECUTION OF A MONARCH APPALLED MANY PARLIAMENTARIANS, THE KING WAS EVENTUALLY SENTENCED TO DEATH"



This painting by Charles Landseer depicts Cromwell reading a letter found in Charles's cabinet after the battle

quite lightly, with relatively few fatalities on the battlefield. The battle was over not long past noon, and the Parliamentary commissioners in attendance with the New Model Army reported that about 600 Royalists perished that day and 200 Roundheads, though modern estimates put the Royalist loss somewhere in the vicinity of 1,000.

The aftermath


Somewhere in the region of 5,000 Royalist prisoners were taken, maybe more, mostly from the infantry units. This was an almighty blow to the king's cause, as was the loss of arms and, vitally, ammunition. The manufacture of gunpowder required saltpetre and sulphur, both of which were mostly imported from overseas, and the Roundheads controlled the majority of important port towns along England's eastern seaboard. Charles also lost a cabinet containing his personal correspondence, including letters communicating with supporters on the continent. Though he made light of the loss, the wily Parliamentarians employed the letters for propaganda, publishing their content in a bid to showcase the king's Catholic sympathies.

The king retained some troops, and had a number of smaller armies and garrisons

scattered across the British Isles, while a pro-Royalist army held the upper hand in Scotland. He hoped for further support from across the Irish Sea, yet nothing came of the negotiations with the Irish and his supporters north of the border were soon heavily defeated in September.

In England, the king found recruitment difficult in the aftermath of Naseby. The New Model Army mopped up pockets of resistance, and Oxford and Bristol fell. In May of the following year, the king surrendered to the Scots, who handed him over to Parliament. He briefly escaped, but was swiftly recaptured and sent to London to be tried as "a tyrant, traitor, murderer and public enemy to the commonwealth of England."

Though the execution of a monarch appalled many of Parliament's supporters, the king was eventually sentenced to death. The conflict between Parliament and the crown had escalated into war when the King raised his standard at Nottingham, followed shortly with the battle at Edgehill in October 1642. In January 1649, on a scaffold outside Whitehall, Charles I lost his head to the executioner's axe. The Commonwealth of England was declared and Parliament's victory was complete.



Mark Stretton holds the World Record for drawing a 200-pound draw weight war bow

WORDS MATTHEW MOSS & WILL SHERMAN

THE BOW THAT BUILT BRITAIN

The English longbow has become legendary as one of the most effective and feared weapons of the Medieval age

In the hands of English and Welsh archers, the longbow became the stuff of legend. From the blood-soaked fields of the Hundred Years' War to the mythical figure of Robin Hood, the longbow came to represent the common man during an age synonymous with the dashing chivalric knights of the nobility.

Originally used as a hunting weapon, the use of the bow in war began during the Dark Ages by the Anglo-Saxons, Vikings and later the Normans. Over time, the draw-weight and power of the bow increased, and clashes with Welsh archers during the 13th century impressed the English commanders – leading them to field large contingents of archers.

The English use of archers en masse was a tactical innovation that proved decisively

effective in countless battles. The 'English longbow' dominated battle for more than 300 years during the Scottish Wars, the Hundred Years' War and the Wars of the Roses. Capable of blistering rates of fire and hitting enemies hundreds of yards away, the longbow was a terrifyingly effective weapon. The men who wielded the bows were seasoned professionals who had spent years honing their skills.

Longbowmen formed a class of their own – not as grand as the noble knights, but still a cut above the lowly foot soldier. They smashed charging French knights at Poitiers and Agincourt; cut down Scottish hordes at Falkirk and Flodden; and outshot Genoese crossbowmen at the Battle of Crecy. The longbowman, however, was not invincible. He was susceptible to cavalry attack, and at Verneuil in 1424 and Patay five years later, French knights smashed through the unprepared English archers.

Despite this, the archers continued to make up a vital part of the English armies of the period. While many became professional soldiers, most were drawn from other walks of life. Surviving documents show butchers, tailors, furriers, cooks, blacksmiths and even physicians enlisting as archers – all drawn to the king's banner by the generous daily pay offered to skilled bowmen. The longbow and the archers who used them became the scourge of battlefields across Britain and Europe, creating a legend that endures even today.

“THE LONGBOW AND THE ARCHERS WHO USED THEM BECAME THE SCOURGE OF BATTLEFIELDS ACROSS BRITAIN AND EUROPE, CREATING A LEGEND THAT ENDURES EVEN TODAY”



ANATOMY OF THE BRITISH LONGBOW

TRADITIONAL BOW-MAKER WILL SHERMAN EXPLAINS THE KEY FEATURES OF THE BOW, AS WELL AS WHERE ITS DEADLY POWER LIES

THE MEDIEVAL WAR BOW

Almost seven feet long, two inches wide and with a draw-weight of up to 150 pounds, this hand-crafted single piece of wood could propel a deadly missile weighing a quarter of a pound up to 230 yards with ease.

ARROW BAGS

Arrow bags were provided to archers for transporting their ammunition. The bags would have been made of linen and contained a stiff leather disc with holes for the arrow shafts. This kept the arrow fletchings from being damaged in transit. It is most likely that the arrow bags would have contained 24 arrows, known as a 'sheaf'. These bags could be secured to a belt using a knot that tightened around the arrows while allowing them to be used easily.

FLETCHINGS

The flights, or 'fletchings', of the arrow were made of goose, swan or peacock feathers. The feathers were fastened to the arrow shaft using animal skin glues, and bound firmly in place with silk. The fletchings would either be trimmed with shears or burned to shape with hot steel. A feather has a natural curve, and by using three feathers from the same wing, spin would be imparted to the arrow much like rifling.

NOCKS

To protect the soft yew wood from being damaged by the bowstring when being shot, the tips of cattle horn were used. These horn 'nocks' had a single groove cut into one side, into which the bowstring would be looped or tied.

ARROW STRENGTH

With such powerful bows, the wooden ends of the arrows would often split and break on release. To protect against this, a thin sliver of flattened cow horn was inserted into a slot cut at the base of the arrow, going against the grain of the wood, strengthening the arrow considerably.

HANDLE

Medieval war bows had nothing covering the handle, unlike more recent longbows. Leather grips are seen on most modern or Victorian bows, sometimes intricately detailed or decorated. These can be padded, or wrapped around cork to make the thin handle more comfortable.

BOWSTRINGS

Bowstrings were made from hemp or linen. The strands were coated in beeswax and twisted together to form a strong loop with no knots or joins that could result in weakness. When the bow was not being used, the string loops were lifted out of the horn nocks and slid down the bow limb.

THE TARGET LONGBOW

Lighter, faster and more stable, this modern *reincarnation of the war bow* has a draw-weight of only 50 pounds, and in the hands of a skilled archer can achieve incredible accuracy.

WAR BOW VS SPORTING BOW

As military archery became extinct, the longbow evolved into sporting equipment. The immense draw-weights were no longer necessary, as arrows didn't need to pierce thick armour. As a result, the bows became lighter, faster and more stable – perfect for shooting in competitions. They became stiffer in the centre section for increased accuracy, and exotic hardwoods began to be used in laminations to rival the natural spring of yew, which was quickly becoming rare and expensive.

ARROWS

The arrows used in military archery varied greatly in size, shape and weight. An average length of around 30 inches can be assumed from the thousands of arrows found on the Mary Rose, which sank in 1545. Often half an inch thick at the point, they were armed with hand-forged steel heads, each designed to do a specific job.

CONSTRUCTION OF A WAR BOW

A Medieval war bow was usually made of yew wood from Europe. The thin layer of living outer sapwood was creamy in colour, and resisted tension – perfect for the flat 'back' of the bow. The dead inner heartwood was darker and more caramel in colour, and resisted the massive compressive forces acting against it at full draw, making it an ideal timber for the rounded 'belly' of the bow. This formed a naturally occurring spring.

“A FEATHER HAS A NATURAL CURVE, AND BY USING THREE FEATHERS FROM THE SAME WING, SPIN WOULD BE IMPARTED TO THE ARROW MUCH LIKE RIFLING”

THE AGE OF THE LONGBOW

ONE OF THE MOST REVOLUTIONARY WEAPONS OF ITS AGE, THE LONGBOW HELPED THE ENGLISH CUT A SWATHE THROUGH FRANCE

The longbow helped to shape what became the English way of war: small mobile armies made up of knights, men-at-arms and, most importantly, archers, who could march and fight at a moment's notice. Throughout the Hundred Years' War between France and England, the longbowmen proved their worth. A skilled archer was able to loose up to eight arrows per minute and strike an enemy more than 200 metres away. In order to master the longbow and become an archer, both strength and skill were required. Hours of daily practice at the 'butts' were needed, and by 1369 the call for trained archers had become so important that Edward III decreed all sports were to be banned and all able-bodied men were to practise their archery instead.

In battle, an archer would have to fire as fast and consistently as he could, often with his life depending on it. A French chronicle of the Battle of Crecy even recalled that "the English archers...

shot their arrows with such force and quickness that it seems as if it snowed."

English archers first made their name at the Battle of Falkirk, destroying the tightly packed Scottish schiltrons. But the Battle of Bannockburn, in 1314, demonstrated how vulnerable archers were to cavalry when Scottish horses outflanked them. This became a pattern, with archers often proving decisive when they were expertly deployed, as at Neville's Cross in 1346 and Aljubarrota in 1385, or when they were well protected either by stakes as at Agincourt or by men-at-arms as at Crecy.

Their weaknesses were revealed, however, when they were caught in the open at Verneuil and Patay or were lured away from their defensive positions. At Formigny, in 1450, they were left vulnerable and were cut down mercilessly by enemy cavalry.

The typical 130 to 150-pound draw-weight of a war bow enabled it to penetrate a knight's plate armour at about 60 yards. Archers used a variety of arrows, from sharply pointed and hardened arrowheads to incendiary arrows and broad-headed swallowtail points, which were difficult to remove.

Long needle-like bodkins were the best arrowheads for attacking chainmail, textile armour and horses, while short spear-point

arrows were best for piercing a soldier's plate armour. These pointed tips could stab deep into flesh, and lacerated the victim's tissue with their every movement. Broad-headed arrows, meanwhile, could create hideously painful wounds and were difficult to remove even for trained surgeons.

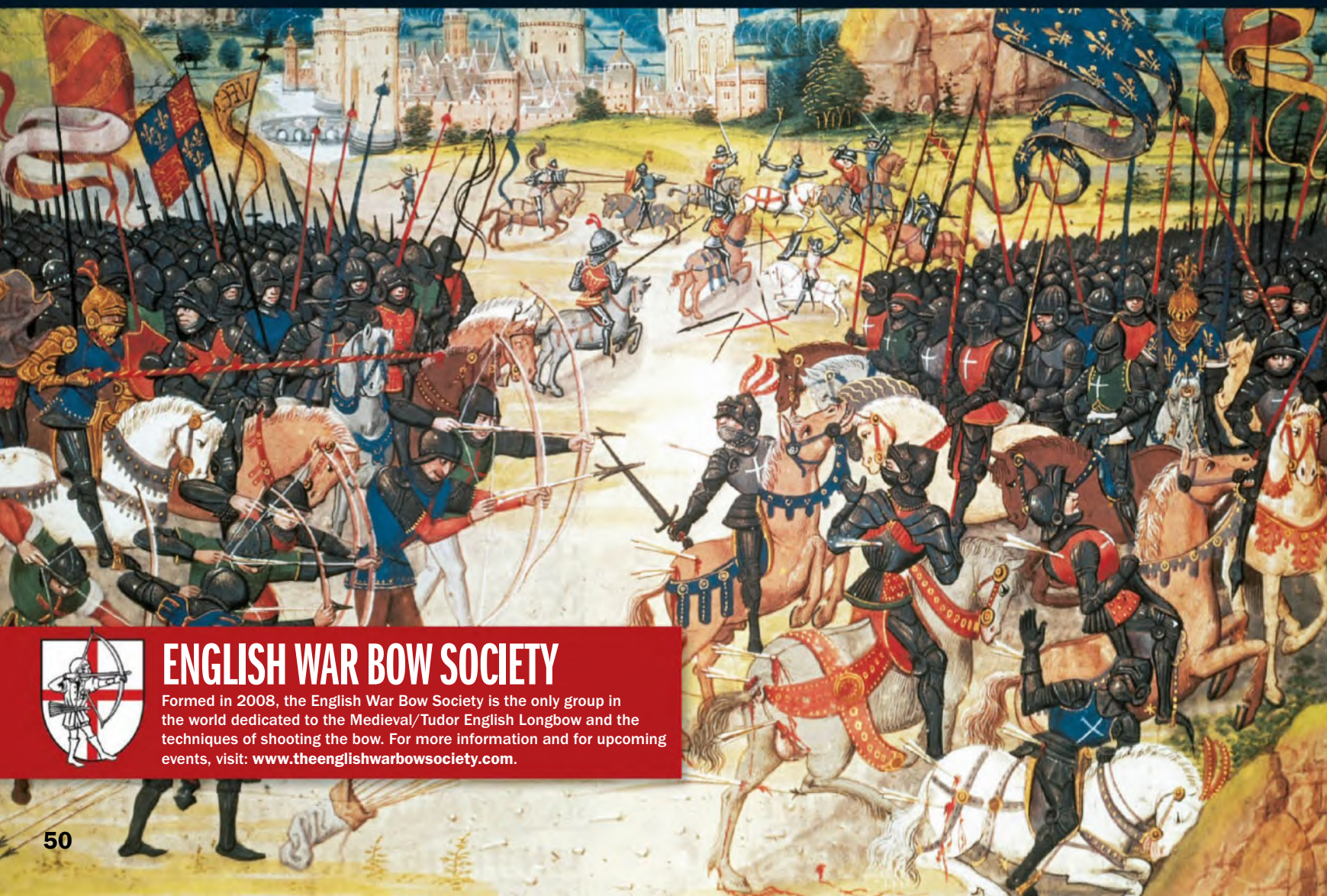
Crucially for a war economy, the war bow was cheap to make, lightweight and versatile. Even as late as 1545, Henry VIII's flagship, the Mary Rose, carried more than 200 longbows and thousands of arrows.

The Battle of Pinkie Cleugh, in 1547, marked one of the last times the longbow was used in a major battle, with both the English and Scottish armies fielding several thousand archers. While the archers did not play the pivotal role that they had in earlier battles, they fought alongside Henry VIII's most modern gunpowder weapons – cannons and arquebuses.

Despite the dawning of the gunpowder age, archers continued to be part of English armies during Elizabeth I's reign, with longbowmen among the trained bands that prepared to meet the Spanish Armada's invasion force in 1588.

Below: At Poitiers in 1356, English archers drive off the initial French cavalry charge. The longbowmen used broad-headed swallowtail-tipped arrows

"THROUGHOUT THE HUNDRED YEARS' WAR BETWEEN FRANCE AND ENGLAND, THE LONGBOWMEN PROVED THEIR WORTH"



ENGLISH WAR BOW SOCIETY

Formed in 2008, the English War Bow Society is the only group in the world dedicated to the Medieval/Tudor English Longbow and the techniques of shooting the bow. For more information and for upcoming events, visit: www.theenglishwarbowsociety.com.

MILITARY ARROWHEADS OF THE MEDIEVAL PERIOD

TAKE A CLOSER LOOK AT MEDIEVAL ARROWHEADS AND FIND OUT HOW EACH WAS MADE AND USED



LOZENGE-SHAPED HEAVY BODKIN

Heavy, large and with four sharpened edges, this long bodkin point was developed purely to punch holes right through steel plate armour. The arrowhead socket is formed from a flattened spoon shape, rolled into a cone and fitted over the wooden arrow shaft. When used with a half-inch-thick arrow weighing almost a quarter of a pound and shot from a true military war bow, this would have been the equivalent of a Medieval rocket-propelled grenade.



TYPE 10

This was perhaps the most common arrowhead of the Hundred Years' War – simple and fast to make, and highly effective against the armour of the period. The Type 10 was a simple bodkin – a four-sided point and a rolled socket. Forged by a master armorsmith, this was the evolution of the needle-bodkin. As chainmail gave way to plate armour, the Type 10 arrowhead found its way into the Medieval arms race.



TYPE 16

This arrowhead has a very distinct difference from the bodkins. It contained barbs on either side, which made it incredibly difficult to remove from whichever target it may have pierced. The barbs would most likely have been 'fire welded' to the head separately. The popularity of such a head is unknown, but surviving examples of Type 16s do surface from time to time. This may have been a military-adapted version of a hunting head.



TUDOR BODKIN

As with the Type 10, this arrowhead would also have been cheap and fast to produce. According to master armorsmith Mark Stretton, once the socket has been formed in the usual way, the red-hot arrowhead is placed into a press or 'swage', which is then hammered shut. The corners are then cut and ground to produce the sharpened edges. This type of head would have been mostly ineffective against plate armour, but would pierce many types of textile armour, such as padded Gambesons or leather Jupons.

Longbow vs Crossbow

GREAT RIVALS OF THEIR AGE, THE LONGBOW AND CROSSBOW HAD THEIR MOST FAMOUS CLASH IN 1346 IN A VALLEY IN NORTHERN FRANCE

Like the longbow, the crossbow was first used for hunting, but in time it evolved into a deadly weapon of war. The crossbow's greatest strengths were its superior power and relative ease of use, enabling crossbowmen to train in days rather than the years it took for an archer to become proficient. However, its rate of fire was much slower and its range less than that of the longbow.

The most famous clash between the longbow and its rival came in August 1346, at Crecy, where Edward III's small force of 10,000 men won a decisive victory against Philip VI of France's 30,000-strong army. Philip's army included a corps of 6,000 Genoese crossbowmen who, at the start of the battle, advanced ahead of the French army.

As the Genoese mercenaries began to fire at the English line, the crossbow's fatal flaws became clear. Soaked by heavy rain, the thick strings had become slack and stretched, reducing the Genoese crossbow's range even further. As the English archers began to return fire, the crossbowmen, without their protective shields, were left exposed in the vital minutes it took them to reload. Caught in a hail of English arrows, they retreated. Contemporary accounts recall that the disgusted French knights, advancing behind the crossbowmen, cut down scores of the retreating Genoese mercenaries.

"THE CROSSBOW'S GREATEST STRENGTHS WERE ITS SUPERIOR POWER AND RELATIVE EASE OF USE"



While frequently enemies, archers and crossbowmen often found themselves working together. At Falkirk, English archers and crossbowmen beat the Scots

The arrowheads shown are made by Miloslav Lasky Krizan and Hector Cole MBE

Getty

THE FORGOTTEN SIKH REGIMENTS OF THE BRITISH EMPIRE

*Sikh officers of the British
15th Punjab Infantry
Regiment in 1858, shortly
after the Indian Rebellion*





THE FORGOTTEN

Sikh Regiments

OF THE

British Empire

WORDS JACK GRIFFITHS

Serving the British Army for decades, Sikh soldiers became some of the fiercest fighters and most loyal servants to crown and country

Before the British first cast their eyes to the northern frontier of India, the Sikh Empire was the major force in Punjab. Existing since 1799, under the leadership of Maharaja Ranjit Singh it became one of the largest territories in the subcontinent. But when Singh died in 1839, it began to disintegrate. As the 1840s dawned, the British Empire and its East India Company drew closer to the southern border of Punjab. The British saw the Sikh Empire as a beneficial buffer between them and the uncharted Afghan lands, and military operations were stepped up in the region.

Distrusting British intentions, a Sikh army crossed the River Sutlej into British-controlled lands, initiating the first of two Anglo-Sikh Wars. Conflict ebbed and flowed until 1849, when the British emerged victorious at the decisive Battle of Gujrat, and the region of Punjab was annexed. The Sikh military found itself leaderless, and its generals seized this opportunity to ally themselves with their new British overlords, who rewarded them with small kingdoms such as Kashmir. Impressed by the performance of the Sikh warriors in the two wars, the British decided to take on the

local soldiers and use their fighting skills within their own ranks; the Sikh Pioneers were born. Starting as a small number of troops, they would later go on to form the Sikh Light Infantry and serve Britain with distinction.

Eight years after the end of the Sikh Empire, unrest was growing again. After the mutiny of 1857, control was handed to the direct supervision of the British Crown. The corrupt and faltering East India Company was now all but over as the British Raj was born. From here, the Sikhs of Punjab would assist the British Army whenever they could, armed with their motto 'Deg Tegh Fateh' (prosperity in peace and victory in war).

The Sikhs and the Sepoy Mutiny

1857 is seen as a major turning point for Indian nationalism. The Indian Rebellion had gripped the subcontinent and the Sikhs, now fighting for the crown, were pressed into action. These were still early days for the Sikhs in the British Army and their decision to assist was primarily motivated by their disdain for the Hindustanis and Sepoy soldiers. After the two wars, the Sikh people were scattered and rudderless,

so fighting for the British Raj was the most reasonable option open to them. Seeing it as an attempt to regain land for a renewed Mughal Kingdom, the Sikh soldiers used the uprising as an opportunity to strike back at the people who had fought against them in the past.

The Hindustani Poorbias were the main target after they had supported the British in the Anglo-Sikh Wars and welcomed the demise of the Sikh Empire. This ill feeling was exploited by the British, and many Sikhs were lured by the idea of a career in the army. Previously, the army had suffered revolts, so fresh recruits to bolster the ranks couldn't have come at a better time.

For the newcomers, the British Army offered generous opportunities and respect for religious practices within its ranks. After disrespecting Muslim and Hindu practices in the past, the British generals had learned that embracing and appreciating local culture was the best way to get potential Sikh soldiers on their side and utilise them in their forces.

Despite the antagonism towards the rebellion, there were actually some who remained against the British. On one occasion, many Sikhs gathered in the city of Ropar in support of the uprising. This was a short-lived movement, however, as the leaders were promptly put to death if they decided to side with the rebellion. The most prominent leaders who supported the British cause were the Cis-Satluj chiefs of Patiala, Malerkotla, Kalsia, Nabha, Faridkot and Jind, who ensured that

“IMPRESSED BY THE PERFORMANCE OF THE SIKH WARRIORS IN THE TWO WARS, THE BRITISH DECIDED TO TAKE ON THE LOCAL SOLDIERS AND USE THEIR FIGHTING SKILLS WITHIN THEIR OWN RANKS; THE SIKH PIONEERS WERE BORN”

their combined military forces were behind the empire. These communities had historically been opposed to Maharaja Ranjit Singh in the days of the Sikh Empire, so had always sought an alliance with the British.

The suppressing of the rebellion on 20 June 1858 was of great benefit to the vast majority of Sikhs, who now reaped the economic and military benefits that came with an alliance to the British, and had no fear of a Mughal Persianate society returning anytime soon.

Wars in the north

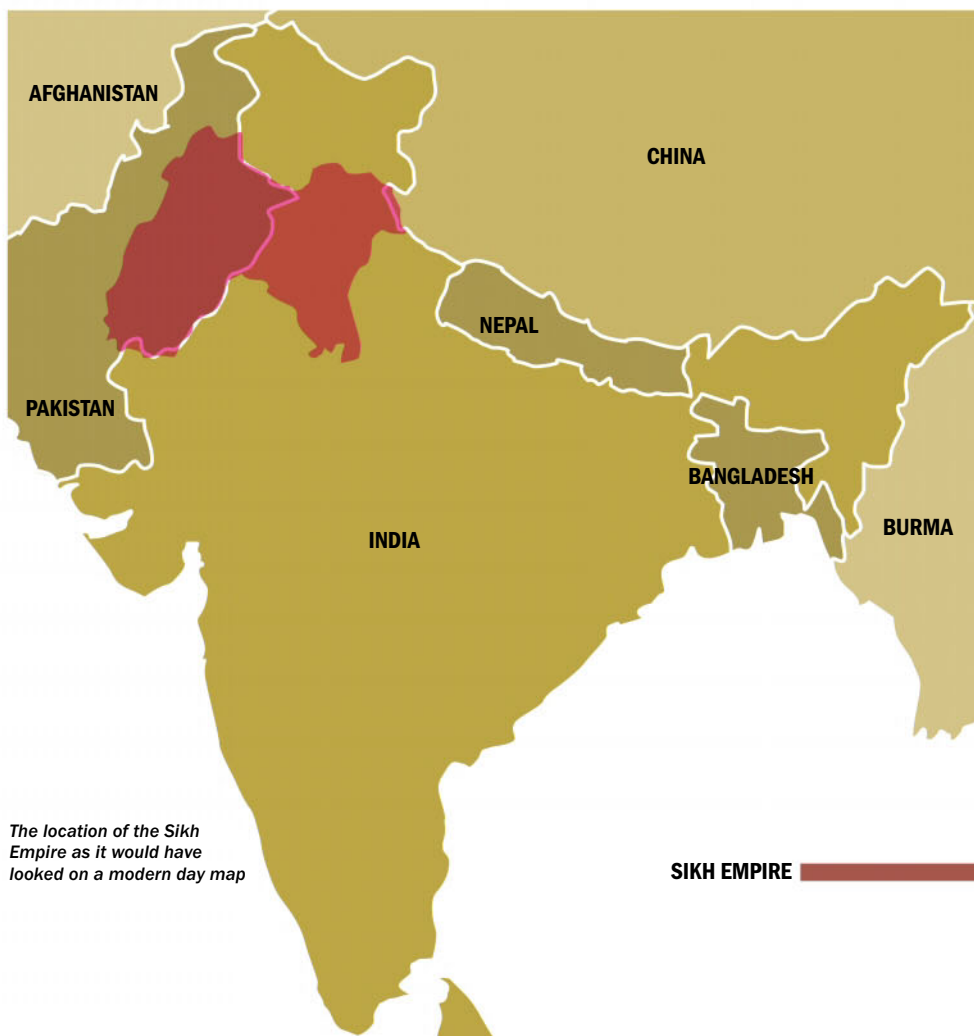
With the rebellion over, the British regained control over the country under the new British Raj, which tightened its grip over the subcontinent. With the Sikh lands in the north west now secure, the empire was close to clashing with the aspirations of one of its most formidable rivals, the Russians. The British once again employed many Sikhs to aid their forces, and they marched into the Afghan capital, Kabul, as part of several class company regiments. The Second Anglo-Afghan War had begun.



The 15th Sikh Company on the march in France in the summer of 1915

THE SIKH EMPIRE IN INDIA 1799–1849

THE SIKH EMPIRE REACHED ITS PEAK IN THE 1840S BUT WAS SEVERELY REDUCED IN SIZE FOLLOWING TWO ANGLO-SIKH WARS



The location of the Sikh Empire as it would have looked on a modern day map



Sikh officers serving in the north-west frontier of India in 1933

THE ANGLO-SIKH WARS

THE END OF THE SIKH KINGDOM AND THE BEGINNING OF BRITISH CO-OPERATION

By the time of the First Anglo-Sikh War in 1845, the majority of the Indian subcontinent was under the control of the British East India Company. Upon the death of Maharaja Ranjit Singh in 1839, the Sikh Empire became disjointed and severely weakened by internal conflicts. When British troops arrived on the empire's frontier at the city of Firozpur, the invaders had decided on the military occupation of the Punjab. British operations in the area had assembled a force of 17,000 men and 60 guns.

War was declared against the Sikh Khalsa Army after they crossed the River Sutlej. Ranjit Singh had left a modernised and disciplined army, but due to low morale and infighting, they were no match for the British. It is without doubt that the wars were lost by the egocentrism of the Sikh commanders rather than a one-sided British rout. The new leaders immediately took over the administration of the region under the Treaty of Lahore, but resentment to this new rule led to the Second Anglo-Sikh War in

1848, which lasted almost a year before a second and final defeat for the Sikhs. Without a military of their own, the Sikh soldiers soon joined the British Army in search of a career in the armed forces.

Below: Raja Lal Singh was the commander of the Sikh armies in the first war and was defeated at the decisive Battle of Sohraon



The Punjab Frontier Force was set up and comprised the 1st, 2nd (Hill), 3rd and 4th Regiments of infantry as well as cavalry units. Acting primarily as rapid-response regiments, they would patrol the British borders in search of any Afghan aggression. The Sikhs displayed great bravery during the war and were employed effectively at both Ahmed Khel and Kandahar towards the end of the conflict in 1880. Their courage and dedication was admired by the British and would be utilised to greater effect in future campaigns.

A British victory came in 1880, but the war was now more than just an Anglo-Afghan affair, as Russia waded into the conflict. A period known as the 'Great Game' was initiated, and in what has been known since as the 'Cold War of the 19th century', the two powers sidestepped each other without ever locking horns. To stabilise their forces, the British raised two more Sikh regiments, the 35th and the 36th, who would see battle in the next big conflict in the region, the Tirah Campaign.

The war was almost inevitable. In the face of further British expansion during the Great Game, the empire became tangled up in issues with various local hill tribes. Although rarely united, they put their forces together against the British in what became known as the Tirah Expedition. As a result, the British lost a fair amount of land in the north west including the strategically important Khyber Pass. With access to the pass now in Afghan hands, the security of the British Raj was in jeopardy. Up to 40,000 soldiers were called into the area including many Sikhs, who were keen to put their skills to the test after being marginalised

SIKHS OF THE SOMME

THE REGIMENTS WHO FOUGHT IN ONE OF THE BLOODIEST BATTLES OF THE WAR

The British Sikh regiments fought all over France for the Triple Entente, including in Ypres, Neuve Chapelle and the 1916 Battle of the Somme. Faced with gas attacks, disease, machine guns and the mud of the trenches, the fields of France were a world away from the peaceful plains of the Punjab. Two Indian regiments even took part in the notorious High Wood cavalry assault, the only charge of the battle. Sikhs also formed a team of bicycle despatch riders, traversing Fricourt and the Mametz Road near to the battlefield.

The loss of life among the units was so high that by the latter stages of the war the Indian regiments were relocated to the Middle East, where they were closer to India and easier to reinforce and supply. A Sikh soldier, Indar Singh, fighting at the Somme in September 1916, wrote home: "It is quite impossible that I should return alive. [But] don't be grieved at my death, because I shall die arms in hand, wearing the warrior's clothes. This is the most happy death that anyone can die."

Sikh soldiers on the march in northern France



from the main army in the previous Anglo-Afghan War. After initial assaults by the Gurkha and Highland regiments, the Sikhs were called in to supplement the Highland charge on the bloody but successful Dargai Heights.

Undoubtedly the greatest Sikh achievement of the war was the Battle of Saragarhi. A back-to-the-wall conflict of Thermopylae proportions, 21 Sikh soldiers managed to defend a small outpost from 10,000 tribesmen for more than seven hours. Despite receiving no aid from any of the surrounding British forts, the 36th Sikhs Regiment fought courageously and, even in defeat, managed to blunt the Afghan assault for long enough to save the two forts of Gullistan and Lockhart. To this day, Saragarhi Day is celebrated annually in honour of this heroic sacrifice and each of the 21 received the Indian Order of Merit posthumously.

The main British Field Force was now in the ascendancy, but guerilla warfare was taking its toll on the beleaguered soldiers. In November 1897, a unit from the Northamptonshire Regiment was going through a village in the Saran Sar Pass when it came under heavy fire. In the end, the group had to be saved and extracted by a combination of Sikhs and Gurkhas, who managed to haul the British out of harm's away with only 18 men killed.

The terrain and local knowledge of the Afghans even made life difficult for the impressive Sikhs, who were ambushed while on the hunt for straggling Afridis, one of the many Afghan tribes. Along with two companies from the Dorset Regiment, the Sikhs were cornered in a number of burned-out houses before making it to safety. 25 men and four officers were killed. The next move of the expedition was to starve the Afghans of their winter food supplies. Accompanying the Yorkshire Light Infantry, the 36th Sikhs made a grave error and, after a misunderstanding, abandoned the strategically valuable heights to the west of a pass. Their position was taken up by a group of Afridis, who inflicted casualties on the men from Yorkshire, forcing them to escape with the aid of a relief column.

Despite the occasional failure, the Sikh regiments proved themselves a worthy ally to the British. After serving in the Malakand Campaign of 1897, Winston Churchill wrote a book of his experiences. In it, he praised the contribution of the Sikhs, and wrote of how he nearly lost his life saving a wounded Sikh.

Below: 45th Rattray's Sikhs, raised in 1856 by Captain Thomas Rattray, with three prisoners captured during the Second Anglo-Afghan War



THE BATTLE OF SARAGARHI 12 SEPTEMBER 1897

THE BRAVE DEFENCE OF A SMALL MOUNTAIN OUTPOST BY 21 SIKH WARRIORS

In 1897, one of the most volatile regions of India was the Tirah area in the north-west frontier. In September, 10,000 tribesmen from the local Pashtun peoples hadn't taken kindly to British annexation and marched on the forts of Gullistan and Lockhart. The British stationed in the area were caught off guard and unable to summon any reserves to combat the oncoming threat. The tribesmen focused their attack on the small and seemingly innocuous Saragarhi outpost between the two forts. What they hadn't counted on, however, were 21 Sikh soldiers from the 36th Sikhs infantry regiment, dedicated to defending their ground to the last man.

2 ENTER THE TRIBESMEN

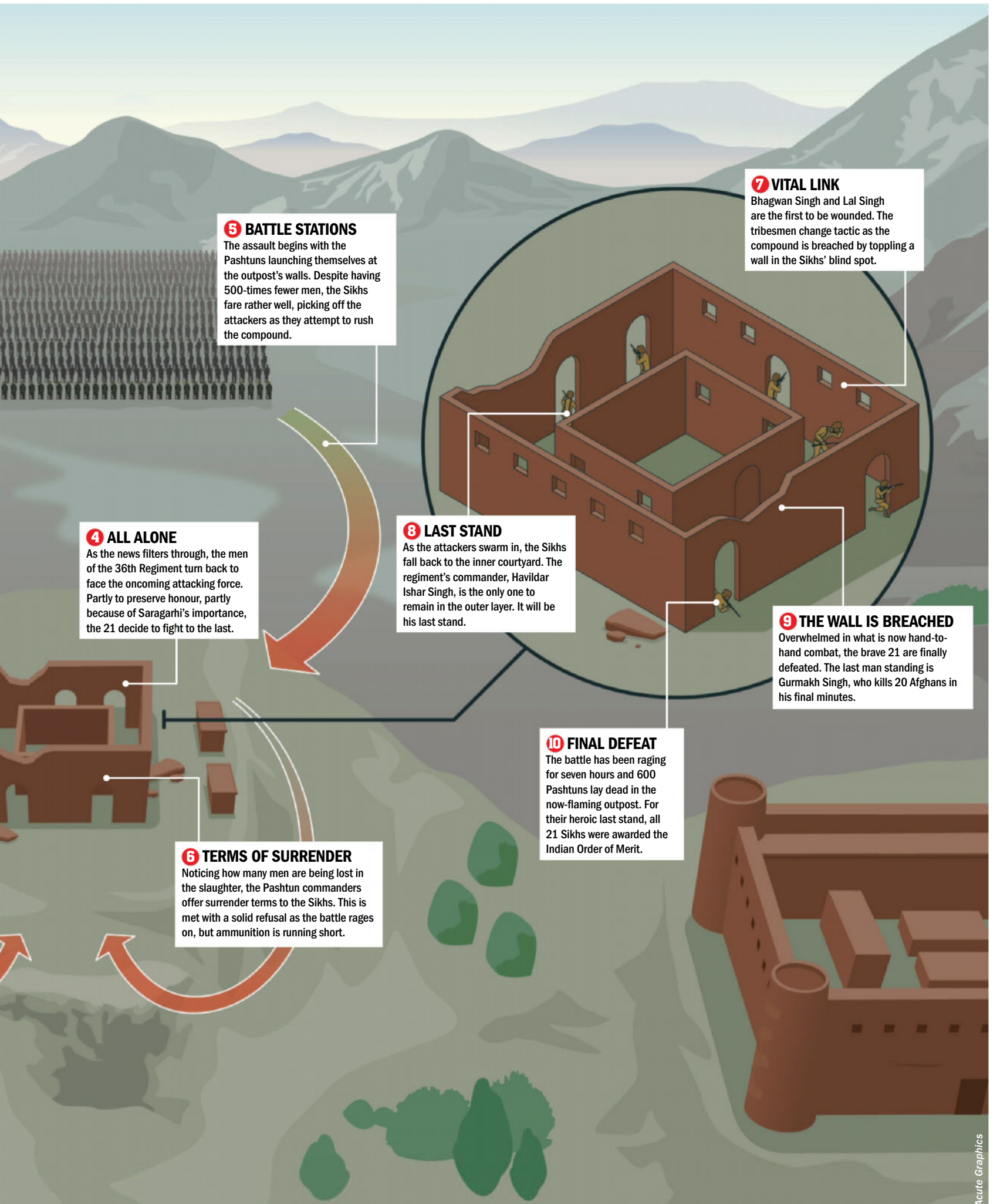
At 9am, 10,000 Pashtuns assemble ready to take the outpost, and with it the valuable British communication centre. Spying the enemy, the Sikhs call to Fort Gullistan for aid.

1 THE DEFENDERS ARRIVE

In the first week of September, 21 members of the 36th Sikh Regiment are entrusted to defend the area after earning their stripes in previous engagements against Pashtun forces.

3 HELP DOESN'T COME

Lieutenant Colonel John Haughton is in charge of Gullistan, but is unable to come to the aid of the Sikhs. He is low on soldiers, so cannot sanction any relief.

**5 BATTLE STATIONS**

The assault begins with the Pashtuns launching themselves at the outpost's walls. Despite having 500-times fewer men, the Sikhs fare rather well, picking off the attackers as they attempt to rush the compound.

4 ALL ALONE

As the news filters through, the men of the 36th Regiment turn back to face the oncoming attacking force. Partly to preserve honour, partly because of Saragarhi's importance, the 21 decide to fight to the last.

8 LAST STAND

As the attackers swarm in, the Sikhs fall back to the inner courtyard. The regiment's commander, Havildar Ishar Singh, is the only one to remain in the outer layer. It will be his last stand.

7 VITAL LINK

Bhagwan Singh and Lal Singh are the first to be wounded. The tribesmen change tactic as the compound is breached by toppling a wall in the Sikhs' blind spot.

9 THE WALL IS BREACHED

Overwhelmed in what is now hand-to-hand combat, the brave 21 are finally defeated. The last man standing is Gurmakh Singh, who kills 20 Afghans in his final minutes.

10 FINAL DEFEAT

The battle has been raging for seven hours and 600 Pashtuns lay dead in the now-flaming outpost. For their heroic last stand, all 21 Sikhs were awarded the Indian Order of Merit.

6 TERMS OF SURRENDER

Noticing how many men are being lost in the slaughter, the Pashtun commanders offer surrender terms to the Sikhs. This is met with a solid refusal as the battle rages on, but ammunition is running short.

WWI SIKH REGIMENT SOLDIER

INCORPORATED INTO THE BRITISH ARMY, THE SIKH REGIMENTS WERE EXPOSED TO THE HORRORS OF TRENCH WARFARE AS MUCH AS ANY OTHER NEW RECRUIT

TURBAN

Turbans were allowed to be worn by all Indians in the British Army. The high command approved it after realising its religious and cultural importance.

RIFLE

The Short Magazine Lee Enfield (SMLE) was the classic Tommy weapon. A 1907 Pattern Wilkinson Sword bayonet was attached to the end, for when battle got up close and personal.

UNIFORM

As with every new face, the 1902 Pattern Service Dress tunic and trousers was the order of the day for the Sikh soldier. Patches were sewn in to protect from wear when carrying weapons.

EQUIPMENT

75 round ammunition patches were commonly carried, as were tools used to build a quick trench. Water carriers, haversacks, blankets, rations and mess tins were the essentials.

KIRPAN

Initially forbidden, the ceremonial dagger was allowed when the British Army needed more Sikhs to fight. As a compromise, they were reduced in size and reallocated to the troops. Longer Tulwar swords were also used instead of a bayonet.

BOOTS

Puttees were worn to protect from the mud of the Western Front while steel-toe-capped B5 ammunition boots took the strain of marching and fighting.

The Black Lions of World War I

The British Raj joined the fight against the Central Powers in August 1914, just after the outbreak of war. Up to 1.5 million troops came from the subcontinent to fight and the 15th Sikh Regiment was the first to arrive in Europe, with the British press dubbing them “the unique stalwarts from the East.”

35,000 Sikhs arrived at the start of the war, 22 per cent of the Indian Armed Forces’ initial strength. This number is remarkable when you consider that Sikhs only made up two per cent of the total population of the Indian subcontinent. Despite having specialised regiments, volunteers weren’t confined to specific units and it was common for a Sikh to serve in a general Punjab regiment and for a Muslim or Hindu to be part of a Sikh regiment.

The average Indian battalion came to France with 764 men, but three months into the conflict, trench warfare had taken its toll. The 47th Sikhs Regiment was just one of the units who recorded massive losses; they had only 385 soldiers left. Witnessing the slaughter first hand, Commander of the Indian Corps Sir James Wilcox remarked: “It was the dark days of 1914 when our men had to face mortars, hand grenades, high-explosive shells for which they themselves were not provided. They could reply only with their valour, their rifles and two machine guns per battalion. And yet they did it.” The massacre barely improved as 1915 dawned, and after the Battle of Neuve Chapelle in March, the Sikh Regiments had lost an astonishing 80 per cent of their men.

The Sikh culture was new to the peoples of Europe, so much so that when the Germans captured them, they were believed to be followers of Islam. Unable to communicate with their German captors, they were sent to Turkey to fight alongside the Muslim troops of the Ottoman Empire. Forever loyal, these Sikhs made a habit of escaping and trekking back to the British posts in Afghanistan and continuing the fight against the German Empire. The loyalty of the troops from India showed no bounds. Paid a measly 11 Indian Rupees a month for their services, the Sikh soldier saw himself as a martyr for the cause.

As well as performing admirably on the Western Front, the warriors from the subcontinent also served in the Australian and New Zealand forces. Only 19 are believed to have formally enlisted, but this example shows just how far the Sikhs were willing to go to fight for king and country. Many others served with the British Corps at Gallipoli, and their role is particularly memorable at the Third Battle of Krithia. Even though the Ottomans held the upper ground, the Sikhs were still ordered to charge and did so to their deaths as they were cut down by machine gun fire. Losing 380 men out of 514 and 80 per cent of their officers, the 14th Battalion of Sikhs suffered these heavy losses in just one day as the disastrous campaign lurched on.

The British Army of World War I is often represented in the idea of ‘lions led by donkeys’. Without doubt, the Sikhs were some of the bravest of all the Tommies. The Sikh way of fighting made such an impression on the Brits that many temporary places of worship,

SIKH CULTURE IN THE BRITISH ARMY

WHILE SERVING THE BRITISH OVERSEAS, HOW WERE THE SIKH RELIGIOUS CUSTOMS LOOKED UPON IN THE ARMY REGIMENTS?

Throughout both world wars, a Sikh (as well as other Indian recruits) was instantly recognisable thanks to his turban. Refusing to wear the Brodie helmet, every Sikh wore their customary headwear even in the heat of battle. The British Army was initially hesitant to welcome other cultures and practices into its ranks. However, after being impressed by the Sikhs and learning from past mistakes with mistreatment of other cultures, they were very welcoming of Sikh customs into the military.

Other peoples such as the Gurkhas were also introduced into the army, making it a truly

multicultural armed force. Records suggest that 39.6 per cent of the British Indian Army was Sikh in World War I. This was 20 times their representation in the population of India. The Sikh turban is still allowed in today's army, but due to specialist headgear in vehicles, there are times when only a patka can be worn underneath a helmet. Beards also have to be shaved for wearing breathing apparatus. There are currently no Sikh regiments in the British Army (there are only 160 Sikhs in all the armed forces together) but plans have been made to possibly revive the unit.

Below: Sikh soldiers as part of a carrier and mortar team in the Indian 6th Royal Frontier Force, Italy, 1943
Bottom: A propaganda poster from World War I, illustrating the many cultures from within the empire



THE BRITISH COMMONWEALTH OF NATIONS



TOGETHER

HITLER'S INDIAN LEGION

NOT ALL SIKHS FOUGHT FOR KING AND COUNTRY

It may seem strange considering the Nazi hierarchy's renowned stance on Aryanism, but many Sikhs defected from the Allies and instead joined the Axis cause. Buoyed by the words of Indian Revolutionary leader Subhas Chandra Bose, the Free India Legion was set up to fight alongside the Nazis and force the British out of India.

Made up of Muslims and Hindus as well as Sikhs, mass oaths of allegiance were made to Hitler after a recruitment drive of Indian POWs captured during the war. The men were incorporated into the Waffen SS, and fought for the Axis in France and the Netherlands in the latter years of the war. After the defeat of the Axis nations, the Indian Legion attempted a daring escape of the Third Reich. The troops were eventually spotted attempting to cross the Alps to make it into the haven of neutral Switzerland. Before they could make it over the border, they were captured by American and French troops and sent back to India.

“THE FREE INDIA LEGION WAS SET UP TO FIGHT WITH THE NAZIS AND FORCE THE BRITISH OUT OF INDIA”

Below: Field Marshal Rommel assesses members of the Indian Legion, who were still permitted to wear their turbans, in February 1944

Bottom: A soldier of the Indian Legion armed with an MG 34 in Bordeaux, in March 1944





A Sikh gunner fires a Maxim machine gun in 1915

BURMA CAMPAIGN

A 'FORGOTTEN CAMPAIGN', SIKH SOLDIERS FOUGHT WITH DISTINCTION IN SOUTH EAST ASIA AGAINST THE RAMPANT IMPERIAL JAPANESE ARMY

With the Japanese ploughing through from the east in 1944, as many troops as could be gathered were needed to weather the coming storm. By the summer, air superiority had been achieved by the RAF, so it was now up to the army to face the Japanese back on the ground. The Japanese 31st Division had by now invaded the Imphal and Kohima regions to the north east of British India. At the Battle of Kohima, 2,500 British troops were besieged by up to 15,000 Japanese.

After 64 days of conflict, the Axis troops were beaten back after a stoic rearguard by the British troops. Of the 1 million men employed by the Allies in Burma, 700,000 were Indians. The Kohima Cremation Memorial in the area is the final resting place for 917 Hindu and Sikh soldiers. An inscription on the memorial reads:

**“When you go home
Tell them of us, and say,
For your tomorrow
We gave our today”**

Below: Troops from the 7th Indian Division observe Japanese movements in the Ngakyedauk Pass in February 1944



Gurdwaras, were set up behind the lines, and these temples were used to observe the customs and traditions of Sikhism. The Sikh soldiers even earned the nickname 'the Black Lions', which was coined by their Arabic allies in the Sharifian Army serving in Mesopotamia.

General Sir Ian Hamilton, who led the Mediterranean Expeditionary Force at Gallipoli, paid noble tribute to the heroism of all ranks of the 14th Sikhs: “In the highest sense of the word, extreme gallantry has been shown by this fine battalion... In spite of the tremendous losses, there was not a sign of wavering all day. Not an inch of ground was given up and not a single straggler came back... The ends of the enemy trenches leading into the ravine were found to be blocked with the bodies of Sikhs and of the enemy who died fighting at close quarters, and the glaucis slope is thickly dotted with the bodies of these fine soldiers all lying on their faces as they fell in their steady advance on the enemy. The history of the Sikhs affords many instances of their value as soldiers, but it may be safely asserted that nothing finer than the grim valour and steady discipline displayed by them on 4 June has ever been done by the soldiers of the Khalsa. Their devotion to duty and their splendid loyalty to their orders and to their leaders make a record their nation should look back upon with pride for many generations.”

While the Sikhs were away in Europe and the Middle East, disturbances were common

**“DISMAYED AT THE BRITISH
RULE IN INDIA, A NUMBER OF
SIKHS BEGAN THE SINGH SABHA
MOVEMENT, RESULTING IN A
FIVE-YEAR REVOLT AND THE
CREATION OF THE AKALI DAL
SIKH NATIONALIST PARTY”**

back in Punjab. After the war, the British dealt a heavy-handed response, completely crushing the resistance. On Vaisakhi (Punjab harvest festival) 1919, Colonel Reginald Dyer ordered his soldiers to open fire on the crowd. More than 400 died and a thousand were injured in what became known as the Amritsar massacre.

This bloodshed could have signalled the end of Sikh citizens willing to volunteer in the British Army, and it nearly did in an event known by some as the Third Anglo-Sikh War. Dismayed at the British rule in India, a number of Sikhs began the Singh Sabha Movement, resulting in a five-year revolt and the creation of the Akali Dal Sikh nationalist party. The motivation behind the movement was reclaiming Sikh identity from the spread of Christianity.

Despite the unrest, on the whole the Sikhs remained behind the British Crown and were on hand to fight in the Third Anglo-Afghan War. Beginning in the summer of 1919, the 3rd Sikh Pioneers and the 11th Sikh Regiment joined up with the British to combat the Afghan insurgents, once more displaying their renowned bravery. Ishar Singh was one of these men who fought courageously in the heat of battle. Engaged in combat in the North-West

“EXTREME GALLANTRY HAS BEEN SHOWN BY THIS FINE BATTALION... IN SPITE OF THE TREMENDOUS LOSSES, THERE WAS NOT A SIGN OF WAVERING ALL DAY. NOT AN INCH OF GROUND WAS GIVEN UP AND NOT A SINGLE STRAGGLER CAME BACK”

Frontier of India during the Waziristan Campaign, he managed to repel charging Afghans with a Lewis Gun, protecting many of his fellow soldiers who were receiving medical attention.

Once more unto the breach

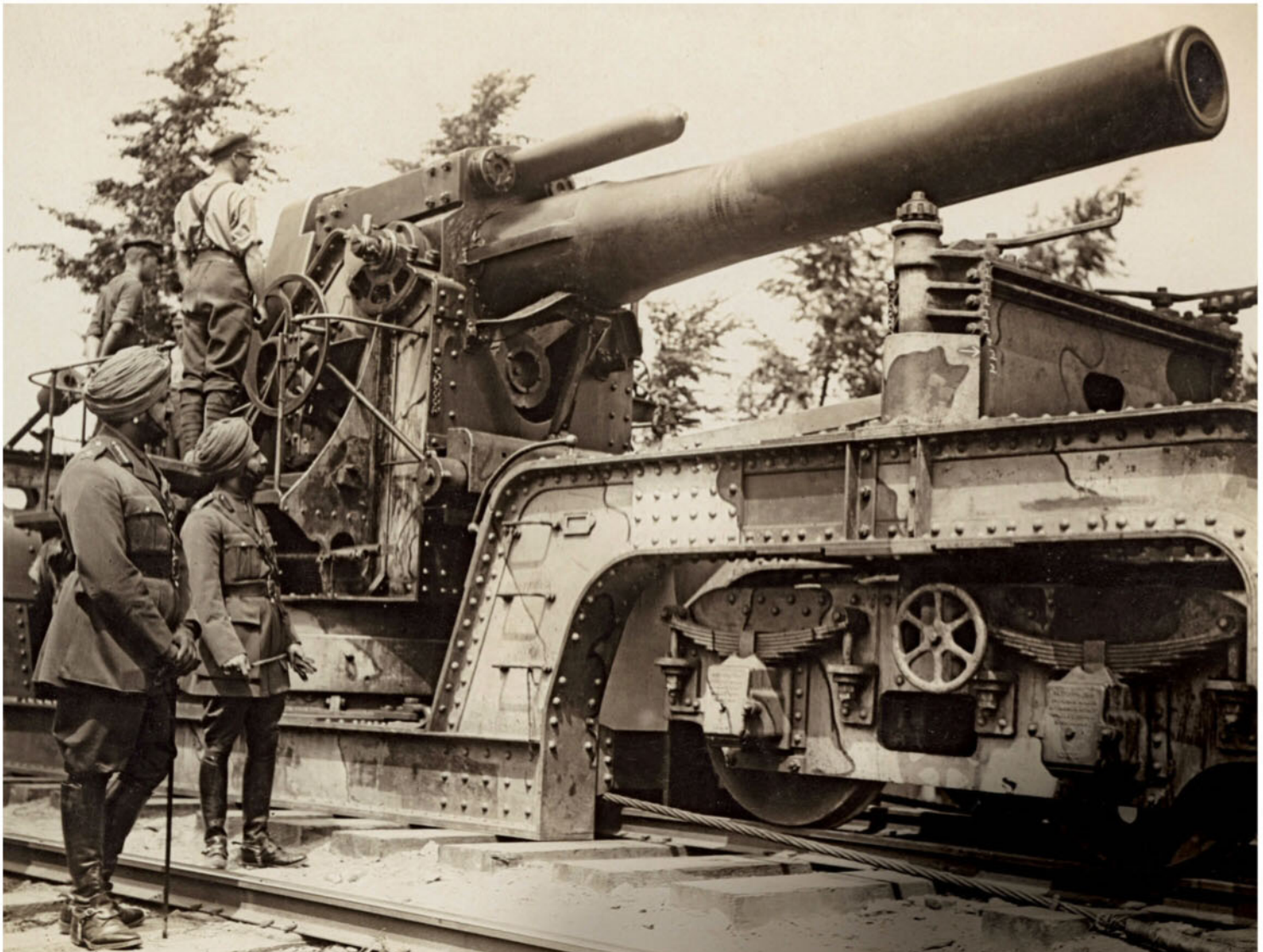
During the inter-war years, Sikh migration into Britain unprecedented levels. Demobilised after World War I, many settled in Britain; wealthy Sikhs came in search of higher study while poorer migrants found work. Door-to-door Sikh salesmen were a common sight on the streets of Britain, but as it became apparent that appeasement wasn't the way forward, they returned to the army in their droves. Within the army, however, demand for Sikh soldiers had waned. After the unrest in the British Raj, Sikhs were falling out of imperial favour despite the fighting ability they showed during the war. Churchill insisted on a reduction in troops from the subcontinent, as Sikh nationalism became

a major concern for the British, who were determined to hold on to their lands in Asia.

The economy was also affected after the Wall Street Crash of 1929, which meant the 1930s saw Sikh regiments being disbanded to cut costs. However, after the ill-fated 'peace for our time', it was not long before the volunteers were required again as the might of the Third Reich's blitzkrieg loomed large.

As war was declared, Britain once again dragged the full strength of its empire into the war. The Indian people were not consulted on entering the war (the Viceroy of India, Lord Linlithgow, declared war on their behalf) but, nonetheless, the Sikhs, both in Britain and in Asia, willingly got behind the war effort. Once again in combat on land, sea and air, the resounding Sikh battle cry of 'jo bole so nihal, sat siri akal' (He who cries God is Truth, is ever Happy) would ring out from the regiments, as six years of total war got underway.

Below: A British Howitzer is inspected by the maharaja of Patiala, Bhupinder Singh



FROM SIKH EMPIRE SOLDIERS TO BRITISH REGIMENTS

WRITER AND BROADCASTER JAY SINGH SOHAL ON THE HISTORY AND MAKEUP OF BRITISH ARMY SIKH REGIMENTS

WAS IT EASY FOR THE SIKHS TO CHANGE THEIR ALLEGIANCE AFTER BEING PART OF A LONG-STANDING EMPIRE?

The Punjab was always a land of conflict, due to subjugation of non-Muslims during Mughal rule, the persecution of Sikhs and Hindus, and the Pathan invasions. But Maharaja Ranjit Singh had brought a period of stability that enabled people from all backgrounds to prosper. The Sikh kingdom was a secular one, and while undivided, Punjab (now split between Pakistan and India) was the home of the Sikh people where the Sikh Gurus had established the faith and community. It was a land where all faiths lived peacefully side by side. The decay of the Sikh Empire after the death of Ranjit brought about much turmoil, which threatened a return to sectarian divisions.

So it was much easier for the British to promote themselves as being crucial for continued peace and security in the Punjab, as long as they were fair and respected the distinct customs and traditions of the three faiths and did not cause offence to these sentiments.

HOW WERE SIKH REGIMENTS CREATED AND MADE UP IN THE BRITISH ARMY? WAS THERE ANYTHING UNIQUE ABOUT THEM?

The recruitment of Sikhs into the frontier force enabled the British to keep those of fighting age and stock away from Punjab, but it also enabled them to get a closer look at what made the Sikhs so good on the battlefield.

The discipline of a Sikh comes from his adherence to his faith – taking baptism as instructed by the tenth Guru Gobind

Singh and maintaining the Five Ks on his person, which includes uncut hair and a dagger. Observing daily prayers and living a simple lifestyle, shunning meat and intoxicants and thinking of women other than his spouse as mothers or sisters are also expected. The British gave the Sikhs an opportunity to live a martial lifestyle; some would have wanted to relive the heroics of their forebears while others saw an income away from farming. As more Sikh men came forward to serve in British units, so British officers saw the merit of organising them in more formal ways. But it was not until the India Mutiny of 1857 when some class-based regiments revolted against Britain that the loyalty and valour of the Sikhs was best demonstrated.

From irregular forces to military police battalions and Sikh regiments of the Bengal Infantry, they evolved with their own uniforms and customs, which empowered and emboldened the men serving in them. They were unique in that Sikhs wishing to join would have to be baptised into the Khalsa and swear an oath of loyalty, not just to the crown but to the regiment. It was taken as a given that a Sikh would put down his life if required for both, because he had given his word.

HOW DID THEIR ROLE CHANGE AS THE BRITISH ARMY WENT FROM THE TIRAH CAMPAIGN TO WORLD WAR II?

The Sikhs earned their spurs on the frontier, and as the conflicts Britain was engaged in became more global, the Sikhs find themselves serving further afield. At first, Sikhs were sent to East Africa and Hong Kong to fight for the British, but when the Great War broke out in

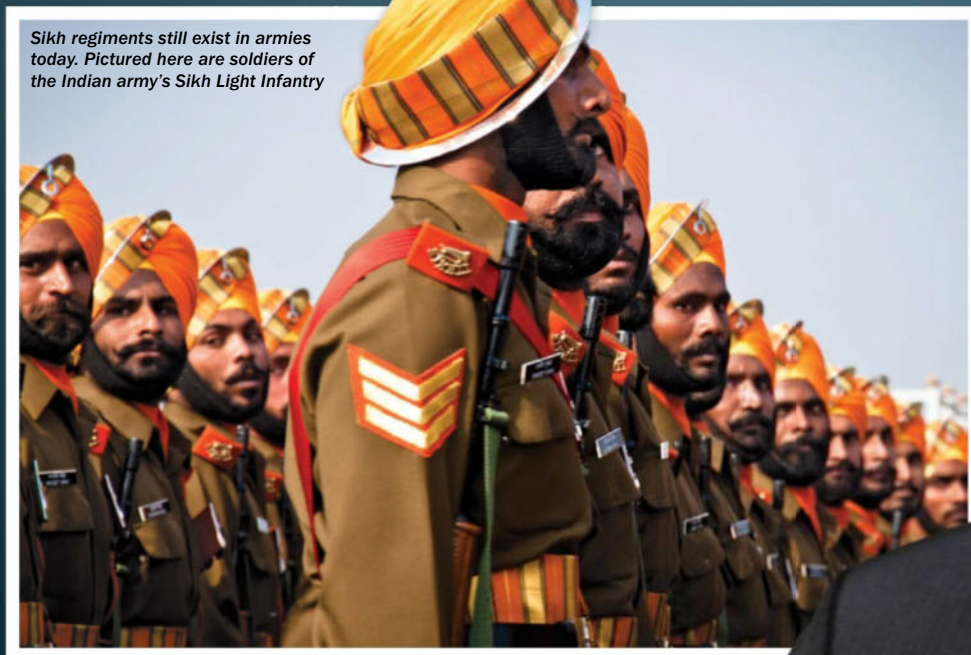
“THE DISCIPLINE OF A SIKH COMES FROM HIS ADHERENCE TO HIS FAITH”

1914, they were sent to every theatre the British were engaged in, not just on the Western Front but in Mesopotamia, Gallipoli, Suez, and Tsingtao in China.

HOW WERE THE SIKH REGIMENTS LOOKED UPON BY THE REST OF THE BRITISH ARMY?

With respect. These regiments had gained a name for themselves fighting against the British, and shown their loyalty and valour on the frontier. They were seen by the rest of the British Army (and indeed foreign armies) as the envy of an empire in which the British could call to service those gallant warriors that live within its territories. A sign of this immense respect and gratitude is the inspiration to name a warship after this martial race: the HMS Sikh. The first of its name was a torpedo boat launched in 1889 while the second was an S-class Destroyer launched at the end of World War I in 1918. The third HMS Sikh came into service in 1938, and during World War II was involved in the hunt for the Bismarck.

Sikh regiments still exist in armies today. Pictured here are soldiers of the Indian army's Sikh Light Infantry



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Heroes of the Medal of Honor

DIRK J VLUG

Under heavy machine gun fire, Private First Class Vlug took on five Japanese tanks in one of the most daring one-man assaults of WWII

WORDS TOM FORDY

For most, the heroics and courage of World War II are remembered as we've seen them celebrated on the big screen time and again: men of valour carrying out feats of immense bravery amid a barrage of explosions and gunfire, while the enemy advances in seemingly insurmountable numbers. Many real-life heroes would be made during World War II; few would be born from an act of such true cinematic-style spectacle as Private First Class Dirk J Vlug, who in December 1944 destroyed five enemy tanks.

Dirk was born in Maple Lake, Minnesota, on 20 August 1916 to Dutch immigrants Isaac and Mina Vlug. He was almost 25 when he joined the army, enlisting at Grand Rapids, Michigan, in April 1944. By December that year he was among the men of the 126th Infantry Regiment, 32nd Infantry Division, holding a roadblock as they moved south on the Ormoc Road in the Philippine province of Leyte.

The US campaign in the Philippines – also known by the codenames Operation Musketeer I, II, and III, and not to be confused with the French operation of the same name, which led to the Suez Crisis – had begun only two months earlier under the supreme commander of the Southwest Pacific theatre of operations, Lieutenant General Douglas MacArthur. The directive was clear: expel the Japanese Army. The Philippines had been under a brutal occupation since 1942, with Filipinos subjected to atrocities and forced into slave labour.

Though the US had a strong relationship with the Philippines, in truth, it needed to be taken for its strategic positioning in the Southwest Pacific conflict – for both nations.

For Japan, keeping the islands meant holding key sea routes and ultimately survival in the war; for the US, taking the islands would be a crucial step in defeating the Japanese army.



FOR VALOUR

The USA's highest military honour is awarded to members of the armed forces for exceptional acts of valour in combat. This is when service personnel have gone beyond the call of duty, often placing themselves in difficult situations beyond reasonable expectation.

WHY DID HE WIN IT?

For leaving a position of cover to single-handedly take out five enemy tanks with a rocket launcher, thereby securing the roadblock and allowing his regiment to advance along a crucial highway.

WHERE WAS THE BATTLE?

The Ormoc Road, which connects the Ormoc and Leyte Valleys on the Philippines island of Leyte. After US forces had taken Ormoc City, they had to move south and take control of the entire highway.

WHEN DID IT TAKE PLACE?

15 December 1944.

WHEN WAS HE AWARDED THE MEDAL OF HONOR?

26 June 1946. 18 months after his act of bravery, President Harry S Truman awarded Vlug the Congressional Medal of Honor during a ceremony at the White House.

On 20 October 1944, the US Sixth Army landed on the eastern shore of Leyte, beginning a sequence of conflicts known as the Battle of Leyte Gulf. The Japanese forces underestimated the strength of the US air and naval forces and it would prove a decisive victory for the US. From there, American troops advanced westwards across Leyte, heading for the Ormoc Bay area.

Regaining control of Ormoc Valley was crucial. It linked with Leyte Valley to the east via the Ormoc Road, a long and winding highway that ran through mountainous terrain and ravines. Once the valley was secured, it ensured access from east to west and offered strong military defences.

Despite resistance from the Japanese defensive units, the US troops continued forward; further landings reinforced their numbers, while Filipinos supported these efforts. On 10 December, they penetrated and took Ormoc City.

It was from this point that Vlug, along with the 126th and 127th Infantry Regiments of the 32nd Division, pushed south down the highway, with the aim of making a juncture with the XXIV Corps, squeezing the main defensive line of the Japanese 1st Division and ultimately securing the route between the two valleys.

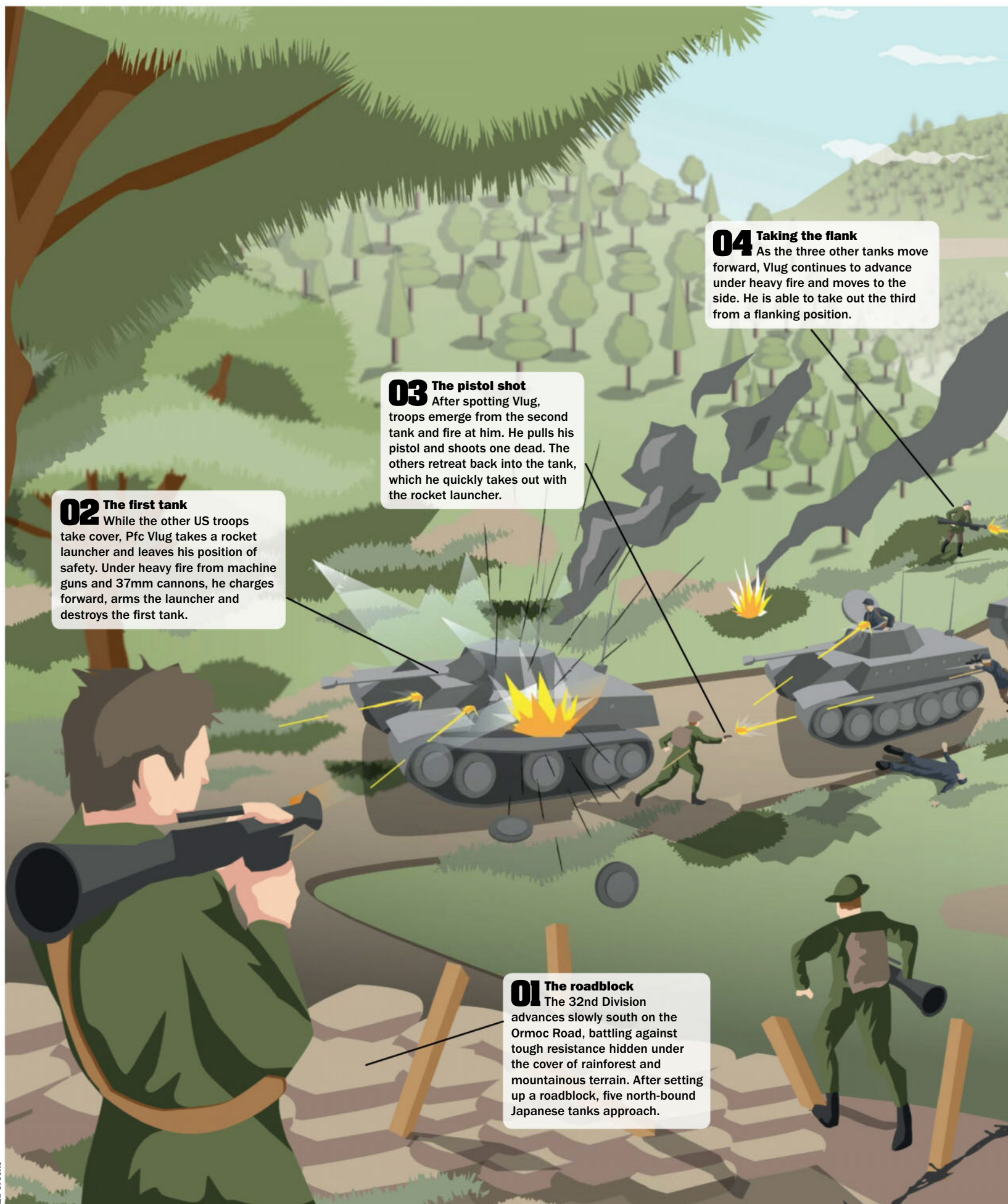
Though the US forces had been dominant so far, Vlug and the 32nd Division faced fierce and tricky opposition. Ridges and ravines overlooked the highway from either side, covered in dense rainforest. The Japanese troops burrowed away at carefully selected defensive points, armed with heavily camouflaged machine guns and riflemen flanking the main artillery points.

Each bend in the road was more treacherous than the last: foxholes were carved into the embankments and spider holes dug under the roots of trees. With the steepness of the terrain and dense rainforest, the Japanese gunmen were near impossible to spot beyond a distance of 75 feet. It is said American troops needed to be within "spitting distance" to identify and take out the machine guns.

Regardless, Vlug and the 32nd Division made a slow advance south, sometimes gaining only 30 or 40 yards each day. On 15 December,



Vlug is welcomed home during a parade in Grand Rapids, Michigan



02 The first tank
While the other US troops take cover, Pfc Vlug takes a rocket launcher and leaves his position of safety. Under heavy fire from machine guns and 37mm cannons, he charges forward, arms the launcher and destroys the first tank.

03 The pistol shot
After spotting Vlug, troops emerge from the second tank and fire at him. He pulls his pistol and shoots one dead. The others retreat back into the tank, which he quickly takes out with the rocket launcher.

04 Taking the flank
As the three other tanks move forward, Vlug continues to advance under heavy fire and moves to the side. He is able to take out the third from a flanking position.

01 The roadblock
The 32nd Division advances slowly south on the Ormoc Road, battling against tough resistance hidden under the cover of rainforest and mountainous terrain. After setting up a roadblock, five north-bound Japanese tanks approach.

05 The final tank
After hitting and destroying the fourth, the fifth and final tank attempts to manoeuvre around the wreckages. Vlug hits it with his rocket launcher, sending the tank off course and crashing down a nearby steep embankment.

“He displayed conspicuous gallantry and intrepidity above and beyond the call of duty... Through his sustained heroism in the face of superior forces, Pfc Vlug greatly facilitated successful accomplishment of his battalion’s mission”

Official citation for Vlug’s Medal of Honor

they set up a roadblock on the highway, where they were met by the advance of five Japanese tanks. In theory, the heavily armoured vehicles should have cut right through them.

Had Vlug stopped to consider his actions, what followed might never have happened. One can only assume he acted on pure adrenaline and instinct, knocking out all five tanks in a matter of minutes.

The first tank laid a smokescreen ahead of its trajectory to conceal its movement, and from behind the screen came heavy machine gun fire and relentless assault from 37mm cannons. The American troops took cover – all except Pfc Vlug, who grabbed a rocket launcher and six rounds of ammunition. Leaving his covered position, he charged toward the road by himself. The Japanese troops aboard the first tank saw Vlug and concentrated their machine-gun fire directly at him.

Undeterred by the hail of bullets, Vlug loaded the rocket launcher and, with one accurate shot, destroyed the first tank. The second tank crunched to a stop and the troops dismounted, charging forward and opening fire on Vlug. Quickly, he pulled his pistol and opened fire, killing one of them and sending the rest fleeing back to the tank. Before they managed to get it moving forward again, Vlug struck them with his second rocket.

At this point, the other tanks continued to roll forward, unleashing their firepower at Vlug. He manoeuvred to the side and positioned himself on the flank of the third vehicle, from where he fired the launcher and took it out.

The remaining two tanks were now at close range of Vlug. Despite being under continuous

fire, Vlug pressed forward with his attack, destroying a fourth tank with the launcher and then hitting the fifth as it attempted to move around the burning wreckages of the others. Losing control, the fifth tank careered off the road, plummeting down a steep embankment.

In what proved to be an interesting footnote, Vlug took time after the incident to capture photographs of the tanks he had single-handedly destroyed. His actions would be a decisive factor in the success of his battalion’s mission. Both the 126th and 127th Infantry Regiments continued south on the highway, with their respective 1st and 2nd Battalions winning bitterly fought victories against the pockets of Japanese resistance along the way.

By 21 December, the US forces approaching from both the north and south met and closed the trap, ensuring the Sixth Army took control of the all-important Ormoc Valley. The battle for Leyte came to a successful conclusion, while the overall liberation of the Philippines islands was all but finished by April, with small instances of resistance continuing until Japan’s surrender on 15 August 1945.

Following his return to US soil, Pfc Vlug was awarded the Medal of Honor on 26 June 1946. After leaving the army, he joined the Michigan National Guard in May 1949 and retired six years later with the rank of master sergeant.

Dirk J Vlug passed away aged 79 in Grand Rapids, Michigan, where he has a street named after him, running adjacent to the Veterans’ Memorial Park. His actions on that day remain a pillar of American military valour, commendable in his defiance of dangerous, seemingly unbreakable opposition.

One of the photos taken by Vlug of the tanks he destroyed



SPITFIRE

WORDS JACK GRIFFITHS

The two-seater version of a TR9, this Spitfire helped train future pilots for the perils of airborne warfare



The Spitfire is almost ubiquitous when discussing Britain's war in the skies during War World II. There were 22 different versions of the classic interceptor fighter built during the height of its time in the RAF. One of these was the SM520, a two-seater based on the TR9 model, which itself came from a Spitfire Mk IX.

The conversion from one to two seats was a post-war program, with the first SM520 arriving in 1948. The project helped provide flight and gunnery practise for new recruits to the RAF, such as the Irish Air Corps (IAC) Seafire fleet and many other air forces in what was to become the Commonwealth of Nations.

This particular model was constructed as a one-seater TR9 in a West Bromwich factory and was first delivered to the RAF in November

1944. As the war came to an end, the fighter was part of the mass RAF disarmament measures and sold to the South African Air Force (SAAF) for £2,000.

In Africa, it helped train pilots who were to be sent to the conflict in Korea and prepared them for flying in the American-made SAAF P-51 Mustangs. After a series of changes in ownership, the single-seat SM520 was converted to a two-seater in 2002, renamed G-ILDA (after a previous owner's granddaughter) and passed on to the Boulton Flight Academy, where it is currently located.

The original British paint scheme was revived and it is now in a camouflage grey/green scheme as seen on the European Standard Day Fighters that helped Britain defend its borders in its hour of need.

“AS THE WAR CAME TO AN END, THE FIGHTER WAS PART OF THE MASS RAF DISARMAMENT MEASURES AND SOLD TO THE SOUTH AFRICAN AIR FORCE (SAAF) FOR £2,000”

SM520

This MK IIa P7350 is the only Spitfire that fought in the Battle of Britain and is still airworthy

SM520 owned by the Boulton Flight Academy

The enduring Spitfire design means it is the only Allied fighter built during the war that was used until the 1950s. More than 20,000 were built in total



Pilots of the 611 West Lancashire Squadron launching a Spitfire off Biggin Hill Airport in 1942



SPITFIRE SM520

YEARS BUILT 1948-51
LENGTH 9.58M (31FT 5IN)
WINGSPAN 11.23M (36FT 10IN)
MAXIMUM SPEED 644KM/H (400MPH)
RANGE 724KM (450 MILES)
ENGINE ROLLS-ROYCE / PACKARD MERLIN 266
CREW 2 (STUDENT AND INSTRUCTOR)
ARMAMENT 2 x .303 BROWNING MACHINE GUNS

COCKPIT

The aircraft that embodies the spirit and resolve of the British in the summer of 1940 is remarkably easy to pilot. Simple to start, the Merlin engine nearly always fired after two blades and was very reliable with each and every cockpit virtually identical and compact. Pilots past and present have commented favourably on its ease of handling as well as the iconic sound of its engine. As with many aircraft of the era, the Spitfire became harder to control when it neared its top speed. However, its light control column allowed it to be more manoeuvrable than its rival, the Messerschmitt Bf 109. During the Battle of Britain. It would often turn out of dives much quicker than its German equivalent. Without powered controls, these turns were achieved by the strength of the pilot's muscles alone.



The cockpit of the SM520 is authentic, down to the spade-like control column and the throttle control on the sidewall



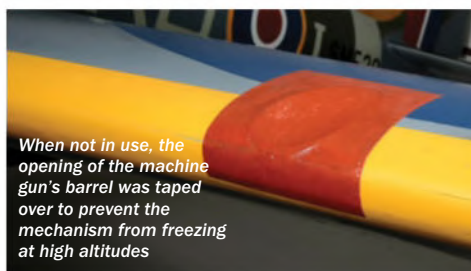
Unlike the Messerschmitt, the Spitfire never took to the use of cannon and relied on its dual machine guns

BROWNING ARMAMENT

During the summer of 1940, the RAF had a foolproof plan against the oncoming Luftwaffe. The Hurricanes would go after the German

Junker 87 and 88 bombers while the Spitfires would face off against the fighters. This decision was tailor made for the RAF aircraft, as the guns on the Spitfire were positioned narrower than those on the Hurricane, making it easier to engage the Messerschmitt fighters.

At its full capacity, the Spitfire could have eight Browning machine guns each containing 300 bullets. This sheer amount of ammo at a pilot's disposal meant even those with poor aim could at least hit something. These projectiles ranged from standard to tracer and incendiary to armour-piercing. The incendiary rounds in particular were very effective, as the RAF pilots targeted the fuel tanks of the Luftwaffe and blew Messerschmitts out of the sky.



When not in use, the opening of the machine gun's barrel was taped over to prevent the mechanism from freezing at high altitudes

THE MESSERSCHMITT BF 109

INSIDE THE SCOURGE OF THE SPITFIRE AND THE LUFTWAFFE'S BACKBONE

Fresh from its preparation in the Condor Legion in the Spanish Civil War, the Luftwaffe's Messerschmitts were ready to take the battle to the British over the Channel. 33,000 were made in total during the war and it provided the spine of the Luftwaffe fleet. Unlike the Spitfire, the Messerschmitt only had two machine guns but these contained magazines of 1,000 rounds each.

They also had two 20mm cannons, which were useful against bombers but struggled to cope with the manoeuvrability of Spitfires and Hurricanes. Its main Achilles' heel was its short range, which prevented it from doing more damage across the Channel. Despite its loss in the Battle of Britain, the Bf 109 shot down the most Allied planes in the war and the design was taken on in 1947 by the new state of Israel. Its longevity was down to its simple and direct design and it was still frequently used even in the later years of the war when the jet-powered Me 262 came into production.

Serving across all fronts and in all theatres, the Bf 109 was integral to the Nazi war machine

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EMBLEMS AND DESIGN

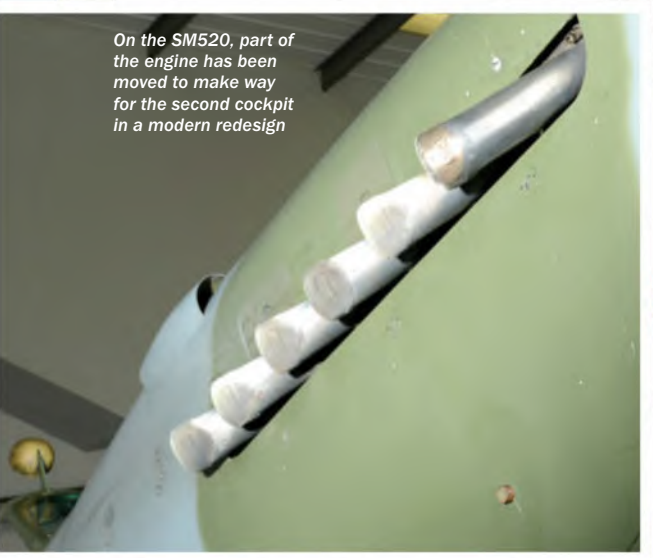
With its origins in World War I, the RAF roundel was used to identify British planes from the ground and in the heat of a dogfight. The Union Flag was initially put forward but due to its likeness to the German cross, the roundel was incorporated.

The first Spitfires were painted brown and dark green while the underside fuselage was white to allow for easy identification by anti-aircraft guns and reduce friendly fire. As the fight against the Luftwaffe began to spread to the Channel, the paint scheme changed from

brown to grey as the new colour blended in with the dark sea.

This colour scheme was employed from then on with the odd variation. These included pink or dark blue for reconnaissance missions at low and high levels respectively and light brown for Middle East missions. Even the roundel was dropped, as in operations over Japan it was deemed too similar to the red disk Hinomaru emblem of the Japanese Zeros.

On the SM520, part of the engine has been moved to make way for the second cockpit in a modern redesign



Above: After the Battle of Britain, the Spitfire took on more of a reconnaissance role and was even occasionally painted pink to add to its camouflage

© John M. Dibbs

Prince Harry is flown in the back of Boulton's Spitfire SM520 over the Needles in the Isle of Wight



“PILOTS PAST AND PRESENT HAVE COMMENTED FAVOURABLY ON ITS EASE OF HANDLING AS WELL AS THE ICONIC SOUND OF ITS ENGINE”



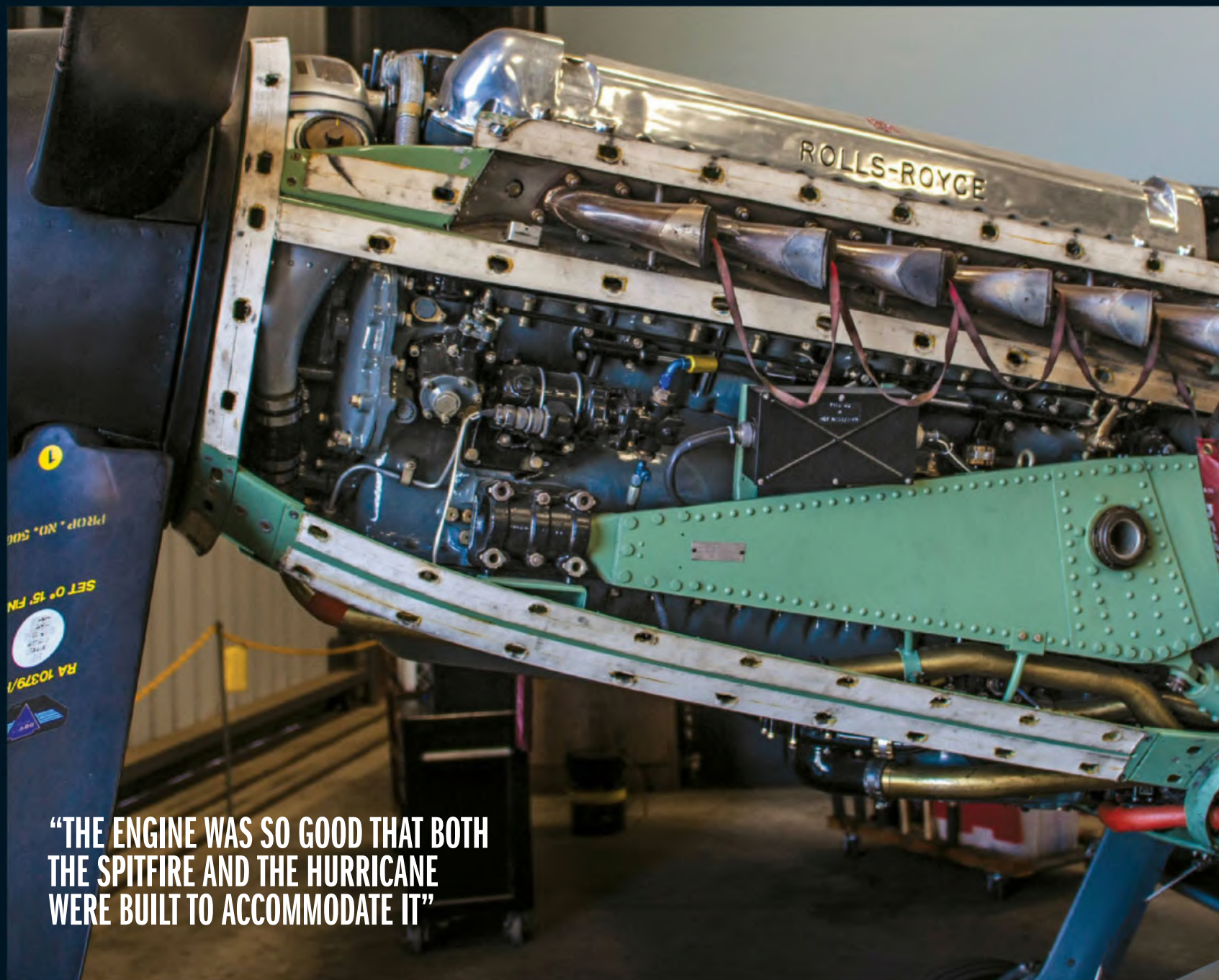
ADLERTAG

On 13 August 1940, better known as Adlertag or 'Eagle Day', the Luftwaffe appeared over the skies of Kent and Sussex, beginning the Battle of Britain. The Spitfire is famous for Britain's resounding victory, but in the following months and years the RAF and the Luftwaffe jostled for air supremacy.

The constantly updated Messerschmitts actually began to outperform the Spitfire by 1941, but the British clawed back the advantage with the development of the better and faster engines in the Spitfire IX. With this new power system, the Spitfires and Seafires had a much broader role in the RAF and Royal Navy. The improved models could now take down V-1 rockets before they hit their target, saving many lives and cities in southern England.



Spitfire pilots would attempt to stop a German V-1 by nudging it off course



**"THE ENGINE WAS SO GOOD THAT BOTH
THE SPITFIRE AND THE HURRICANE
WERE BUILT TO ACCOMMODATE IT"**

SPITFIRE VS HURRICANE

WHICH BATTLE OF BRITAIN MACHINE
WAS THE SUPERIOR FIGHTER CRAFT?



The engine was a good all-rounder and was also used in Lancaster bombers, Hurricanes and the USAAF P51 Mustang



THE MERLIN ENGINE

THE POWERHOUSE BEHIND THE SPITFIRE'S ICONIC SOUND

Despite being used in more than 40 aircraft during World War II, the Merlin is most commonly associated with the Spitfire. Named after the bird of prey, the engine first took to the skies in February 1935 and was a marked improvement on the previous Rolls Royce instalment, the Kestrel.

The engine was so good that both the Spitfire and the Hurricane were built to accommodate it. As efficient as it was, the Merlin wasn't without its faults. Unlike the

engines of German Messerschmitts, the Merlin wasn't fuel-injected, so there was a danger of it cutting out in steep dives.

However, this was mostly fixed in 1941 by the addition of a new diaphragm in the engine's float chamber. This was affectionately known as the 'Miss Shilling's Orifice' after its designer Tilly Shilling. Even after World War II the Merlin was still in assembly, and production only ceased in 1950 after 150,000 had been made to help Britain win the war.

"THE CONSTANTLY UPDATED MESSERSCHMITTS ACTUALLY BEGAN TO OUTPERFORM THE SPITFIRE BY 1941, BUT THE BRITISH CLAWED BACK THE ADVANTAGE"



The Spitfire was very nearly called the 'Shrew', which wouldn't have been quite as intimidating



SUPERMARINE SPITFIRE

- ★ MAXIMUM SPEED 608KM/H (378MPH)
- RATE OF CLIMB 812M (2,665FT) PER MIN
- CEILING 10,668M (35,000FT)
- ★ ARMAMENT 2 x 20MM HISPANO MK II CANNONS
- 4 x .303 CAL BROWNING MACHINE GUNS
- 2 x 240LB BOMBS
- ★ LONGEVITY 1938-48 (20,351 MADE)



HAWKER HURRICANE

- 547KM/H (340MPH) MAXIMUM SPEED
- 847M (2,780FT) PER MIN RATE OF CLIMB ★
- 10,972M (36,000FT) CEILING ★
- ★ ARMAMENT 4 x 20MM HISPANO MK II CANNONS
- 2 x 250LB BOMBS OR
- 1 x 500LB BOMB
- 1937-44 (14,583 MADE) LONGEVITY



The Hawker Hurricane served in all major theatres of World War II

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WORDS LEE SIBLEY

HITLER'S ENGINEER

HOW FERDINAND PORSCHE'S WAR MACHINES ARMED THE THIRD REICH

The founder of Germany's most famous exotic car manufacturer had another, lesser-known career: building military vehicles for the German army across the two world wars

Albert Speer takes a Type 130 Ferdinand for a spin, with Ferdinand Porsche perched to his left

He may be one of Germany's most famed entrepreneurial engineers – with his automotive company today making some 14,326 million Euro in revenue – but the origins of Ferdinand Porsche's engineering legacy lies far away from the boulevards that now host his glamorous sports cars. Instead, the Czech-born stalwart has an incredible yet relatively unknown facet to the early stages of his career: building a series of vehicles for use in the German military, before eventually swapping trenches for tarmac to further exert his engineering prowess.

The son of a tinsmith, Ferdinand displayed attributes of a competent engineer from an early age, bringing electricity to his home and his family's workshop by the age of just 13. He soon turned his fascination with electricity into a career, joining Austria's most revered company in electrical equipment, Bela Egger and Company (the German acronym of which was VEAG). The 18-year-old Ferdinand wasted little time displaying traits of a competent engineer, progressing quickly at VEAG from a trainee to the man in charge of the test laboratories. It was here that Porsche met Ludwig Lohner, an esteemed Austrian coachbuilder of the 19th century who was keen to explore opportunities for electric vehicles.

Lohner's willingness to examine the worth of electric vehicles sat perfectly with Porsche's own interest in the motor vehicle and potential of wheeled power (Porsche had himself invented his own electrocycle for his commute to work) and likewise Lohner was impressed with the young Porsche's ability to find solutions to seemingly tricky problems. For example, Porsche foresaw the switch of engines to the front of a vehicle, where they could be cooled much easier when in motion.

Porsche soon left VEAG and went to work for Lohner, where a variety of vehicles powered by both batteries and engine-driven dynamos were built. The clout of the electric Lohner-Porsche vehicle quickly gained momentum with Vienna's elite, and by 1901 Ferdinand was looking at what would today be known as hybrid vehicles.

Borrowing a 5.5-litre four-cylinder internal combustion engine from auto manufacturers Daimler, Porsche made his first 'Mixte', a French expression to define the blend of both petrol and electric powertrains. The petrol engine of Porsche's vehicle drove a dynamo under its front seats, which then sent electricity to its front-wheeled motors.

With a revised chassis, Porsche entered his new vehicles into hillclimb competitions, winning the large car class and setting a new record for the hill at Austria's Exelberg hillclimb in April 1902. From here, he drove down to Sarvar to take part in Austria-Hungary's 1902

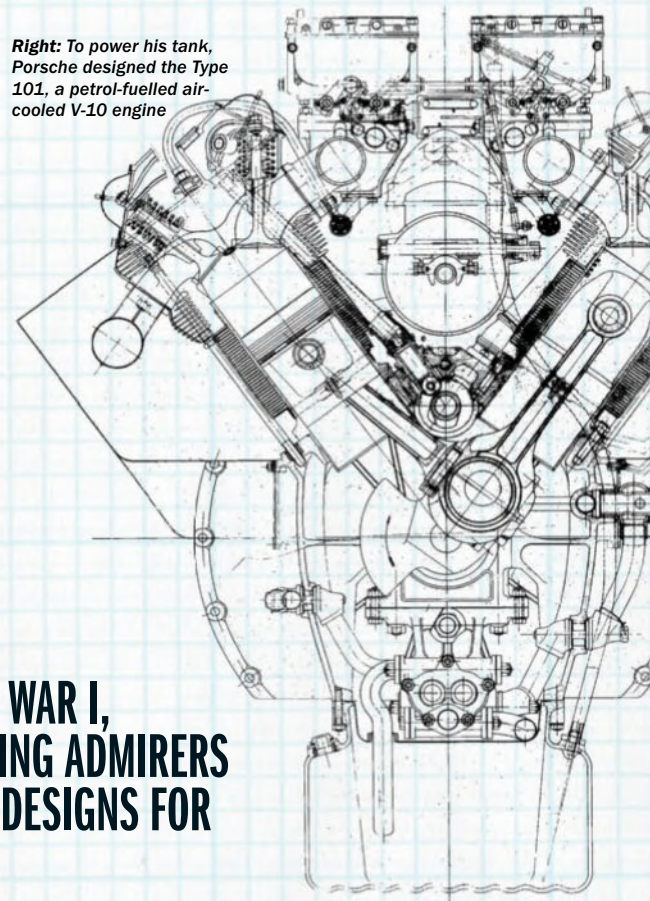
military manoeuvres. Porsche and his vehicle impressed Franz Ferdinand, who Porsche had chauffeured, and the archduke later had one of his assistants write to Porsche to express "how satisfied His Most Serene Highness was in every respect." Ferdinand Porsche's move to garner interest in his vehicles from the military had worked, and it would soon spawn a 40-year career working for the armed forces.

By the outbreak of World War I, Porsche was already winning admirers with his ground-breaking designs for military vehicles. He'd designed powerful tugs with four-wheel drive for towing artillery through fields (first the 50-brake-horsepower M 06 in 1906 followed by the 80-brake-horsepower M 08 in 1910, then the 'Hundred' M 12 with 100 brake horsepower in 1912). These heavy-duty designs were welcomed at a time when there were rising tensions inside and outside the dual Austro-Hungarian empire.

This paid dividends: after the assassination of Archduke Franz Ferdinand by Bosnian militia,

"BY THE OUTBREAK OF WORLD WAR I, PORSCHE WAS ALREADY WINNING ADMIRERS WITH HIS GROUND-BREAKING DESIGNS FOR MILITARY VEHICLES"

Right: To power his tank, Porsche designed the Type 101, a petrol-fuelled air-cooled V-10 engine



THE SCHWIMMWAGEN

PORSCHE'S AMPHIBIOUS CAR WAS NEEDED FOR THE GERMAN ARMY'S FUTURE MARITIME MISSIONS

Internally named the Type 166, the Schwimmwagen (or swimming car) was borne out of the need to take machinery – and the battle – across waters in what was evidently a new maritime frontier for the German war initiative. Ferdinand received a request for an amphibious version of the all-wheel drive Type

87, and the German army specified a top speed on land of 50 miles per hour and six miles per hour in water. The transition from water to land also had to be achieved without the occupants exiting.

The Schwimmwagen took approximately three months to develop and witnessed various changes to its design in that short time. Essentially a

modified version of Volkswagen's Kübelwagen, the vehicle became doorless, while weight was trimmed and rear stowage space sacrificed to help seat four occupants.

Watertight seals were fitted to both axles and all mechanical cables, including those for the brakes. An engine-driven propeller was positioned at the rear of the vehicle after initially being housed. After much testing, the wheelbase was shortened to aid agility, particularly in getting in and out of the water, a result of increased funding of the project by the Waffen SS.

The Schwimmwagen had four-wheel drive and was propelled by a 25-brake-horsepower engine with air-cooling pipes placed well above the water line, while the exterior metalwork was treated to 'panzergrau' (green-grey) paint. No weaponry was mounted to the Schwimmwagen, though the vehicle's unrivalled versatility in land and water meant it proved a valuable asset – particularly in occupied territory – to Germany in World War II.

Buoyed by additional funding from Himmler and the Waffen SS, Ferdinand sent his son Ferry to present the final Schwimmwagen to Hitler in 1941, who was impressed with what he saw.

After various tests in a variety of terrains (on land and at sea), the Führer promptly ordered the build of 100 cars. In all, nearly 14,276 Type 166s were built up to 1944, by which time production at the Wolfsburg factory had slowed right down due to damage from heavy bombardment.



Left: The amphibious car was based on the design of the Beetle and boasted an all-wheel drive system



Above: Though it had genius in its design, the Tiger (P) tank suffered many flaws and was considered unreliable for war

FERDINAND'S FAILED TIGER

THE GERMAN ARMY'S PANZER TANKS WERE ALREADY SOME OF THE BEST ON THE BATTLEFIELD, YET HITLER WANTED BIGGER AND BETTER – AND CHALLENGED PORSCHE TO DELIVER IT

By 1941, Hitler's war industry and economy was in full flow. The Nazis had just emerged victorious from the initial battle of Kiev and the Wehrmacht was only weeks away from declaring war on the USA. Pre-empting this, Hitler ordered a meeting to discuss development of new weaponry, with Ferdinand Porsche and tank manufacturer Henschel in attendance.

The remit for the tank was simple: Hitler needed a machine that was a step up from the current Panzers. They had to be heavily armoured to fend off attack from other tanks, capable of speeds of 40 miles per hour and equipped with a more potent cannon that was dangerous over greater ranges. Hitler wanted the 88mm cannon (originally used as an anti-aircraft weapon in

1933) to be mounted on the vehicle, and that in itself required a bigger tank, as to accommodate it meant a larger turret and a bigger, wider hull. Hitler tasked both Porsche and Henschel with developing separate prototypes in a bid to win the commission for the 'heavy' tank. The vehicle needed to be ready for the German army to use on battlefields by the summer of 1942.

The Henschel tank was designated the Tiger (H) and Porsche's design the Tiger (P). Ferdinand, calling on his title as head of the German Tank Commission, assembled his prototype much more quickly than Henschel, basing his design on the previous VK3001 (P) Leopard. The tank had two air-cooled Porsche Type 101/1 engines mounted in the rear of the vehicle powering two generators, which in turn drove two electric motors that sent final power to the tracks.

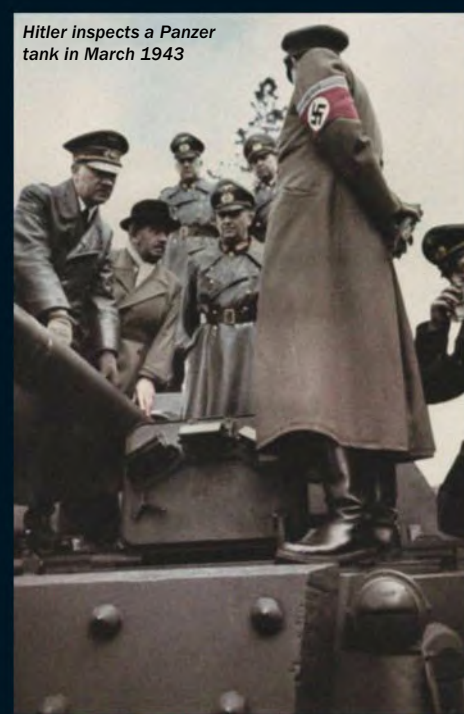
However, the genius of Porsche's radical designs on paper could not translate onto the battlefield, and numerous prototypes were dogged with problems such as breakdowns and on-board fires.

The heavy 45-ton tank also struggled with its power-to-weight ratio, particularly on soft ground.

As such, Henschel and his team eventually won the contract to build the new tanks. Nearly 100 Tiger (P) tanks were already produced by then, though the majority of these stillborn Tiger Program projects were converted into tank destroyers. Armed with huge 88mm mounted gun, with 31 degrees of horizontal movement, it could wipe out an enemy tank long before Porsche's creation itself was within range of fire. These new long-range anti-tank machines were named Type 130 'Ferdinands' by Hitler himself, in recognition of Porsche's work.



Making use of its huge 88mm mounted gun, the carcass of the Tiger (P) tank was turned into the anti-tank Type 130



Hitler inspects a Panzer tank in March 1943

Images: Taken from 'Professor Porsche's Wars', published by Pen and Sword Books; Getty

Porsche's products were heavily used in the field by the empire, most notably his huge M 17 tug, which famously carried Skoda M 11 305mm mortars. Dubbed 'Goliath' because of its size, the M 17 weighed ten tons and had wheel diameters of 57.5 inches. The wheels were also ingeniously cleated, providing the tug with traction to give it a top speed of nine miles per hour even in muddy terrain.

Another key wartime development from Porsche was the land train. Major Ottokar Landwehr demanded a train be built that could tackle the perilous roads of Bosnia and Herzegovina. It needed to be able to negotiate sharp turns and cross dilapidated bridges, tackle ascents and descents of up to 23 per cent incline and even go back on its own tracks if needed. This was a tough job, but Porsche nevertheless took on the task.

He and his engineering partner Karl Sackward implemented big power (120 brake horsepower) from a six-cylinder engine. He also incorporated Mixte technology previously used by Porsche on cars. This ensured power was transferred, via chassis-mounted motors and electrical cables, to every alternate carriage of the train. Braking was taken care of by pneumatic hoses between trailers, and control of the carriages was adhered to by gearing that kept them on track. A steering gear and controls were also fitted to the rear of the land train, meaning the driver could switch ends and drive the train in what was effectively reverse. Later B-train developments could also be turned into rail-based train vehicles, while bigger C-trains were dubbed 'generator' cars, capable of shifting huge artillery.

Porsche's Great War efforts didn't end there. Keenly interested in aviation, it was his four-cylinder engine that found itself powering a military-commissioned airship, named the

Ferdinand Porsche was known to always test-drive his creations, even during World War II



INSIDE THE TIGER (P) THE FULL BUILD SPEC OF FERDINAND'S FAILED TANK

HULL AND TURRET ARMOUR

The hull was protected by 200mm-thick armour at the front, with the sides being 80mm thick and the rear 20mm. The turret, mounted ahead of the hull, was 100mm at the front, with 80mm thickness all round.

ARMING THE TIGER (P)

The tank was armed with a mounted 7.5cm KwK 42 L/70 with a rate of fire of 13.04 rounds per minute.

ON-BOARD CREW

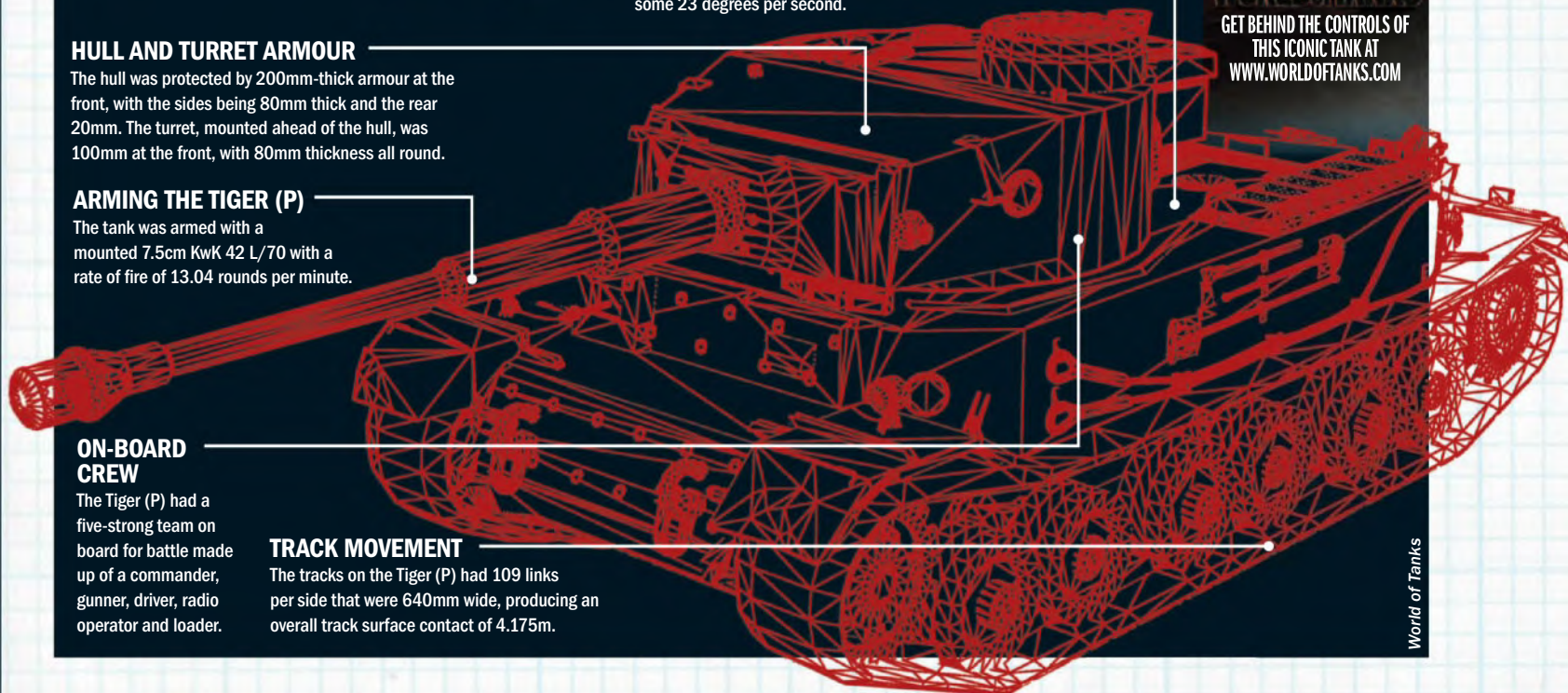
The Tiger (P) had a five-strong team on board for battle made up of a commander, gunner, driver, radio operator and loader.

TRACK MOVEMENT

The tracks on the Tiger (P) had 109 links per side that were 640mm wide, producing an overall track surface contact of 4.175m.

HEAVY TANK MOBILITY

With a 550hp engine, the Tiger (P) could achieve a top speed of almost 22mph. The turret's traverse speed was some 23 degrees per second.



"THE ROCKET WAS A PULSEJET-POWERED MID-WING UNMANNED AIRCRAFT THAT HAD A PAYLOAD OF A ONE-TON EXPLOSIVE CHARGE"

The flying bomb was big business for Volkswagen, accounting for approximately one third of its revenue in 1943

BUILDING THE V-1 TERROR

PORSCHE'S ENGINEERING SKILLS WERE DEPLOYED TO THE SKIES FOR THE 1944 'VENGEANCE' WEAPON

Brits may have been celebrating the end of the Blitz by 1944, but the Luftwaffe weren't quite finished yet, unleashing their secret 'buzz bomb' rocket designed to turn London to dust.

So called a 'V-1' by Nazi propaganda chief Joseph Goebbels (where the 'v' stood for vengeance), the rocket was a pulsejet-powered mid-wing unmanned aircraft that had a payload of a one-ton explosive charge. The plane travelled at up to 430 miles per hour, making it hard to shoot down, and it could travel 150-200 miles from its steam-catapult launch.

Despite the archaic nature of the V-1's brief (the idea of a pulsejet engine dated back to 1908, while an autopilot was considered World War I technology), it wasn't its design that caused problems for the SS, but

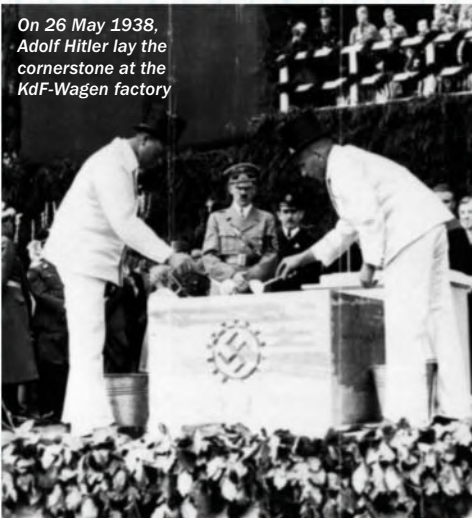
where it was built. At KdF City, production of V-1 rockets was thwarted as the plant faced incessant bombing from the Allies.

This prompted Porsche to look for a suitable new home for the V-1 to be built, and the result was an underground haven at Nordhausen. In March 1944, Ferdinand spoke with SS chief Heinrich Himmler about the need for a labour force to help dig tunnels and prepare the V-1s, which was granted to the tune of 3,500 prisoners of war.

With a new base and a fresh workforce, production of the V-1 quickly resumed, though Allied bombardment of the French beaches meant that many of the launch stations for the V-1 were ruined. Porsche was then charged with building a V-1 with a wider range that was capable of travelling at 500 miles per hour.

Porsche and his engineers overcame this problem by building a turbocharged jet engine called the Type 300. However, a Type 300 never officially took to the skies as VE Day promptly ensured the war was terminated.

On 26 May 1938, Adolf Hitler lay the cornerstone at the KdF-Wagen factory



At the German Press ball in 1939, Ferdinand Porsche presents the tombola prize: a Volkswagen



Parseval, and Austro Daimler (who Porsche now worked for) were also responsible for the designing and building of the tubular frame of the 160-foot ship's control car. Various other Porsche four- and six-cylinder engines, with a Desaxe cylinder placement, found their way into various aircraft during World War I and beyond.

By the end of the war in 1918, Ferdinand had well and truly established himself as a leading engineer. This garnered interest from several leaders around Europe, despite Ferdinand founding his own company – Porsche – in 1931 with son Ferry.

One of those interested parties was Stalin, who wanted to significantly boost the industrial capabilities of the Soviet Union. As such, Soviet representatives visited Porsche at his Stuttgart headquarters and invited him out to visit Stalingrad, to meet the man himself. There, Stalin offered Porsche a job as general director of development of the Soviet auto industry. It was a role that Ferdinand Porsche took his time to consider, before eventually declining on the grounds that he couldn't speak Russian.

However, it was another eventual dictator that Ferdinand Porsche would acquaint himself with, and the first meeting between the two would come in 1933.

German Chancellor Adolf Hitler promoted an interest in motor sports at the opening of the Berlin Show in 1933, and Porsche promptly wrote to him complimenting such a stance. They met shortly after, the main topic

of conversation being the Auto Union's new P Wagen. Hitler liked the designs for the P Wagen race car and sanctioned its build. The car went on to race successfully from 1934-37.

Part of Hitler's vision for his new Germany was to build an affordable motor vehicle for the population, and he tasked the entire German automotive industry with creating it. Porsche submitted his design in 1934 and, in 1935, was awarded the contract by an impressed Hitler. In fact, the Führer was so pleased that he wanted to name the Wolfsburg factory where the car was to be built the 'Porsche Plant', but Ferdinand rejected the offer and the name was changed to the Volkswagen Plant ('Volkswagen' meaning 'people's car').

Porsche's design was simple by nature, which is exactly what Hitler wanted, as it was

"PART OF HITLER'S VISION FOR HIS NEW GERMANY WAS TO BUILD AN AFFORDABLE MOTOR VEHICLE FOR THE POPULATION, AND HE TASKED THE ENTIRE GERMAN AUTOMOTIVE INDUSTRY WITH CREATING IT"

to be the car for the working man. The KdF-Wagen, as it was known at first – which stood for Kraft durch Freude, or 'strength through joy' – was available for Germans to buy by saving up stamps for it. Only a few KdF-Wagens were sold before the outbreak of World War II, when the attentions of Porsche and his engineers were needed elsewhere. The car went back into production afterwards though, when it became colloquially known as the Kaefer, or 'Beetle'. This in turn gave birth to the automotive legend we know today.

With the ascendancy of European tensions transcending into war thanks to Germany's unprovoked attack on Poland in 1939, the huge purpose-built and Nazi Party-funded Volkswagen manufacturing plant in Wolfsburg (coined KdF City by Hitler in 1938) was quickly turned into a natural base for the building of military vehicles. Ferdinand was to be primarily based here for the Third Reich's war effort, appointed as head of the German Tank Commission.

The workforce Porsche used to implement his designs were prisoners of war, though these were often severely malnourished and Ferdinand was known to write to Hitler asking that the prisoners be better fed. Hitler agreed to these requests until the last two years of the war, sending orders to feed those that "look like they could work hard."



Above: In May 1943, Hitler watches a wire-controlled scale model of one of Porsche's new concepts, the Maus

Much like in World War I, Ferdinand's engineering nous was repeatedly called upon for military initiatives on both land and in the air. However, World War II would see Porsche excel in the water too, thanks to the invention of his famous Schwimmwagen. Essentially designed from a Beetle chassis, these amphibious vehicles were used all over Europe to patrol seized territories, and were actually meant to be part of an offensive across the Channel to Britain. Other notable Porsche builds during World War II included a succession of tanks, anti-tank vehicles and even the V-1 rocket.

Right up until the very last days of the war, Ferdinand Porsche was hard at work, devising an improved V-1 rocket that could boast a further range and travel at speeds so fast that Britain's anti-aircraft machinery couldn't keep up with it. This was despite the fact that, with the updated V-1's design remit being cheap and disposable, Porsche knew the situation for both Hitler and the Wehrmacht was by now a desperate one.

POST-WAR PORSCHE

WITH THE WAR OVER, FERDINAND TURNED TO RACING, CREATING THE LEGACY FOR WHICH HE IS KNOWN TODAY

The bombing of the Porsche factory in 1944 proved the final straw for Ferdinand, who returned to Zell Am See, Austria, with his family in tow. By the time the Third Reich had fallen to its knees, Porsche was under house arrest and, on accepting an invite from the French military to visit Peugeot with a view to designing a Volkswagen for France, was promptly arrested as a war criminal instead.


It eventually took some \$62,000 to secure his freedom, raised in a deal by his son Ferry Porsche and Italian racing team Cisitalia in

September 1947. Ferdinand later cleared his name in a French war crimes court, though the \$62,000 release bond was never refunded.

Ferry and Ferdinand turned their attentions to building sports cars in the late 1940s, with Ferry going on to craft the 356 and then, in 1963, the legendary 911 for which the company is best known. Ferdinand died in Stuttgart in 1951, aged 74.



Ferdinand with the Porsche 356, the first car sold under the Porsche name





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Fighters belonging to the Justice and Equality Movement atop their war machine, a pickup truck. The RPG-7 slung over the door is a quick anti-vehicle countermeasure

BRIEFING

The war in Darfur

A desperate regime seeks to control Sudan's resources with a policy of extermination. Their actions led to the most pitiless conflict of our time

WORDS MIGUEL MIRANDA

In April 2015, His Excellency Field Marshal Omar Hassan Ahmad al-Bashir, Sudan's perpetual head of state, announced his victory in the latest national election. He won 94 per cent of the vote and marked the occasion with a fiery speech denouncing his enemies. More than two decades since overthrowing Sudan's only elected leader, the Oxford-educated Islamist Prime Minister Sadiq al-Mahdi, al-Bashir had a new term to chart his country's future.

Whether al-Bashir's win bodes well for Sudan is moot. The previous 26 years of his rule have been an unmitigated disaster. The successful 1989 coup d'état that swept him into power with the blessing of the National Islamic Front (NIF) meant he assumed the presidency by default, leaving him responsible for endorsing an Islamist constitution and waging a protracted civil war in the southern provinces. Neither initiative achieved desirable results.

Sudan's vaunted oil wealth disappeared on 9 July 2011, when South Sudan's independence took the most productive fields away from Khartoum. But since 2009, al-Bashir has been an accused war criminal. Rebel armies defied him in Darfur, the Nuba Mountains and South Kordofan. Worst of all, weeks before the elections, the most persistent resistance group in Darfur, the Justice and Equality Movement (JEM), launched an offensive reminiscent of their 2008 push towards Khartoum – the first time al-Bashir's stronghold was threatened.

Hundreds of pickup trucks armed with machine guns and multiple rocket launchers struck out for Nyala, the capital of Southern Darfur State. It took the combined strength of regular units of the Sudanese Armed Forces (SAF) and local paramilitaries to blunt the JEM's advance. After days of brutal fighting, the group's convoys were scattered and the

government celebrated by displaying captured trucks in Nyala. Fresh from his electoral win, al-Bashir personally visited the city to gloat over this rare triumph against the JEM, the enduring thorn in his side. But despite his exultation, the reality was that the whole of Darfur remained a wasteland – a wasteland that he and his henchmen created.

The region known as Darfur owes its name to the predominant Fur tribe, just one among the multitudinous communities who reside in the vast expanse of Sudan's western frontier bordering Chad. Journalists are prone to describe it as being "as large as France" and a place where sedentary Africans coexist with Arab nomads. Either statement is true to a certain extent. Yet once its recent history is examined, it becomes clear that what befell Darfur from 2003 until the present is a man-made disaster inspired by a twisted world view. A geographical behemoth that claimed the lower half of the Nile river, the western shore of the Red Sea and its own corner of the vast Sahara desert, ever since gaining independence in 1956, Sudan has been at odds with itself.

Never mind the limitless bounty of its farm lands, its eternal pastures or the untapped minerals under its soil. Since its First Civil War from 1955 until 1972 and the 23-year long Second Civil War that ended with the Comprehensive Peace Accord in 2005, Sudan only brought torment and dispossession to its people. This was intentional, because Sudan is twice cursed.

First, power is centred in Khartoum, the sprawling capital near the confluence of the Blue Nile and the White Nile. It was founded in 1821 by the 19th-century Egyptian statesman Muhammad Ali Pasha as the jewel of his army's African conquests.

THE FIGHT TO CONTROL DAFUR

1821

Muhammad Ali Pasha, absolute ruler of Egypt, sends his superbly equipped and European-trained army to invade the Sudan. This marks the beginning of Arab domination in the territory's domestic politics.

1885

Khartoum is overrun by the fanatical Mahdi army after a year-long siege. Major General Charles George 'Chinese' Gordon is killed in battle, having fought to the death two days shy of his 52nd birthday.

1898

Lord General Herbert Kitchener and the Anglo-Egyptian Nile Expeditionary Force occupy Khartoum and impose the British-Egyptian Condominium to secure the Nile river. The cotton industry is established and flourishes in Sudan.

Second, Sudan's leaders never possessed democratic scruples or egalitarian tendencies. Nor did they pretend that a social contract ever existed between the rulers and the ruled. These pronounced features of the national consciousness boiled over in Darfur, an idyllic if fragile agricultural expanse where a terrible slaughter took place from 2003 to 2005.

Outline of a tyrant

Although his grip on power is secure for the time being, al-Bashir can't bring peace to his country – and it's his own fault. Along with his henchmen in the national security apparatus and the NIF, al-Bashir has consistently followed a policy of exclusion and mass violence to deal with his opponents, even after this approach has backfired multiple times.

With five counts of crimes against humanity, three counts of war crimes and two counts of genocide over his head, al-Bashir has done little to improve his country's reputation as a model for constant civil strife.

Born on 1 January 1944 in northern Sudan, al-Bashir belonged to the Arab Ja'ali tribe. A career soldier, he graduated as a junior officer from the Khartoum Military Academy in 1966, earning his MA in Malaysia and serving as military attaché to the United Arab Emirates. It's worth noting that his career advanced in two former British possessions.

He served with the elite Armoured Parachute Regiment and was part of the token Sudanese contingent that fought Israel in the 1973 Yom Kippur War. The rest of the 1970s and 1980s

are uncharted parts of al-Bashir's life; it can be assumed he participated in the Second Civil War. In the broader context of the Cold War, Sudan was an unreliable ally for most of its partners. It abandoned the Eastern Bloc and cosied up to the United States throughout the 1980s. It alternately defied and supported Egypt while transacting clandestine business with Israel. Even today, Sudan, a rogue state, fosters close ties with Iran while accepting foreign investment from Saudi Arabia and Qatar. China has so far proven a steadfast partner, eager for Sudan's oil and minerals in exchange for weaponry and consumer products.

It was also during the tumultuous and drawn-out Second Civil War that Sudan seemed well on its way to 'failed state' status. Not only was the southern half of the country in ruins, but a long-lasting drought also ravaged vast tracts of the arid country. The tribes who inhabited the eastern provinces were terribly afflicted, especially the Fur, the Masalit and the Zaghawa, along with many others. For untold centuries, these communal farmers traded with the nomadic Arab pastoralists who brought their caravans and herds on annual treks.

The tides of history never upset Darfur's ethnic patchwork, where 100 different languages were alleged to be spoken. For Western observers, it was genuinely difficult to even tell the Arabs and Africans apart, since they mingled and intermarried often.

For reasons that could only have made sense according to the ruthless logic of Khartoum's elite, the military began arming the increasingly

SPLA/M soldiers push a lorry mounted with a ZPU-4 14.5mm anti-aircraft gun, a local favourite against Khartoum's sorties



In Darfur and South Sudan, child soldiers are all too common among the warring factions



Soldiers from Chad guard the border with Darfur to protect from random raids by rebels



1944

On 1 January, Omar al-Bashir is born in northern Sudan's River Nile State. He is a member of the Ja'ali tribe.

1956

Sudan gains independence with the peaceful absolution of the British-Egyptian Condominium. The new country inherits vast natural resources and a flawed constitution that doesn't guarantee a secular government or a decentralised political system.

1963

The Anya-Nya, the armed wing of the Southern Sudan Resistance Movement, launches a guerrilla war against Khartoum's forces. It marks a new phase of the struggle for autonomy that began in 1955 – a year prior to independence.

1972

The Addis Ababa Agreement ends Sudan's First Civil War. The Southern Sudan Autonomous Region is established but the civil war resumes in 1983 when Jaafar Nimeiri forces Sharia Law on non-Muslim tribes.

1986

Prime Minister Sadiq al-Mahdi allows Arab militias to rampage in Darfur as a devastating drought ravages agricultural production and leaves millions impoverished.



Right: Most close air support for the ground forces is done by helicopters like the Mi-24 Hind and cargo planes



desperate Arab cattle herders so they could police the sedentary African tribes. The underlying purpose was to eradicate any chance that the ongoing rebellion in the south, where predominantly Christian and animist Africans were fighting against government control, could spread among the stricken Westerners in Darfur.

In the last years of Sadiq al-Mahdi's regime, violence came to Darfur as roving Arab horsemen terrorised villages and stole cattle. The ambiguous campaign appears to have made an impression on the Sudanese army's officers. Prior to launching his coup in 1989, then Brigadier al-Bashir employed similar tactics against the restive southerners. He augmented government forces with armed horsemen, who made few demands on logistics and fought on their own initiative. Here was a fine example of modern cavalymen in a low-intensity conflict. Could its lessons be applied on a larger scale?

The demons on horseback

The religious and quasi-religious have always featured in Sudan's history. In the Western world, Sudan's past conjures memories of the Mahdi, the wandering Sufi mystic Muhammad Ahmad ibn Abdallah who, in 1881, led a rebellion against the British that climaxed with the heroic demise of Major General Charles 'Chinese' Gordon.

But soldiers and fighting men shaped Sudan's history as well. As a nation cobbled together from a disordered frontier, like Chile, Ukraine, Myanmar and Afghanistan, it took the cruel fortitude of a conqueror to preserve it. It was another Englishman, Lord Horatio Herbert Kitchener, who wrested Sudan from the fanatics and imposed the British-Egyptian Condominium over its myriad people in 1898.

During the 1820s, the European-trained army of Egypt's Muhammad Ali Pasha subjugated and then transformed the Sudan into a colonial project. The Arab merchants and administrators who took over this new possession established Khartoum as a scenic trading hub for commodities, cattle, and slaves.

Only dictators have ruled Sudan effectively; the first was General Ibrahim Abboud, from 1958 to 1969. The second was Jaafar Nimeiri from 1969 to 1985. Theirs was the mould that al-Bashir simply filled with his own presence.

In 1999, weary of the Islamists who wanted to impose a theocracy guided by Sharia law, al-Bashir orchestrated the downfall of his old ally Hassan al-Turabi, who was arrested. The move triggered unforeseen consequences.



1989

The Second Civil War ends with a peace treaty, but is terminated by Omar al-Bashir once he seizes power and establishes the National Islamic Front, later known as the National Congress Party. As de facto leader, al-Bashir leads the Revolutionary Command Council.

1993

Government forces launch an offensive in Nuba to depopulate it and remove the inhabitants. The death count is unknown. Omar al-Bashir assumes the presidency, a symbolic post propped up by the NIF.

1999

Hassan al-Turabi is dismissed from the National Assembly and later arrested. *The Black Book* is published. Khalil Ibrahim Muhammad organises the JEM rebel movement from the Netherlands.

2003

This year sees the beginning of the Darfur crisis. The JEM and the Sudan Liberation Army launch attacks on government outposts. The Janjaweed are mobilised as Arab Darfuris are recruited and given weapons.



At the time, Sudan's government practiced a limited policy of inclusion that brought many of Sudan's tribal leaders, whether they were Arab or not, into the fold with government jobs and parliamentary representation.

When these privileges disappeared, dissent began to spread. Khalil Ibrahim Muhammad, a supporter of al-Turabi, collaborated with multiple authors to publish *The Black Book: Imbalance Of Power And Wealth In The Sudan*. The incendiary volume not only cast a harsh light on Sudan's bigoted power structure, it became the foundational text for a grass-roots opposition movement. To avoid the National Intelligence Security Service (NISS) and the watchful eye of the military, Khalil Ibrahim organised his followers in a convenient fringe region: Darfur, his homeland.

In 2003, fighters belonging to the JEM attacked a military outpost. This random event is cited as the initial spark that engulfed Darfur. The response from Khartoum was indeed brutal. Fearful that the JEM and the Sudan Liberation Army (SLA) could join forces and attack the capital, members of al-Bashir's inner circle recruited leaders like Muhammad Hamdan Dagolo and Musa Hilal, the son of a popular tribal leader, to lead a rag-tag army against the Darfuris.

Armed with an assortment of weapons and air support, these Arab raiders, the Janjaweed, would shock the consciousness of the world and certify Sudan's pariah status. From 2004 and late 2005, in a mere 29 months according to some sources, they would butcher between 200,000 and 450,000 people and destroy countless villages.

To comprehend the Janjaweed's reign of terror, recall the ongoing Syrian Civil War. After more than four years of relentless combat, 200,000 Syrians are estimated killed and 9 million have fled their homes. In Darfur, by comparison, the Janjaweed killed as many – if not more – in half the time and ravaged an entire region. Darfur's pre-war population was estimated at 6 million. Total refugee and internally displaced person numbers tallied by aid groups match this figure. On their own initiative, the Janjaweed wiped out the equivalent of a small country.

Blood begets blood

The veteran foreign correspondent Robert Fisk once described war as the total failure of the human spirit. The same could be said of the poor response to the Darfur genocide, despite the best efforts by journalists, NGOs and activists. Although the international community acted quickly, short of armed intervention, the resulting long-term mission left much to be desired. Beginning in 2003, contingents of military and police peacekeepers sent by the African Union (AU) began arriving in Darfur.

Peacekeepers from UNAMID, which is tasked with protecting refugee camps from roving militiamen



A soldier from Chad's national army carries a rocket-propelled grenade launcher



2004

The African Union (AU) launches the AU Mission in Sudan with a peacekeeping objective. This extends to 2005. Several dozen observers arrive in Darfur followed by a substantial force of 3,000 police and military personnel.

2005

The Second Civil War officially ends with the signing of the Comprehensive Peace Agreement between Khartoum and the SPLA/M. This paves the way for the southern state's secession six years later.

2006

A peace deal is signed in Abuja, Nigeria, with a breakaway faction of the SLA led by Minni Minnawi. The other Darfur rebel groups boycott the agreement while the SLA splinters further along tribal lines.

2007

The 10,000-strong UN/AU Mission in Darfur arrives to protect more than 2.5 million internally displaced Darfuris. Lack of co-ordination and logistical problems hamper their efforts.

2008

In May, the JEM launches a failed attack on Khartoum from Darfur. The lightning raid is carried out by convoys of pickup trucks that race across the desert and bush until they reach Omdurman in the outskirts of the capital.

The force was, in the scathing critique of one researcher, “under-funded and ill-equipped.”

True enough, in 2007 the deteriorating situation of the refugees compelled the United Nations to launch a joint plan with the AU called the UN/AU Mission In Darfur, or UNAMID. As with most well-meaning peace missions, UNAMID was an exercise in frustration despite a 20,000-strong force on the ground.

An unexpected outcome of the events in Darfur was to hasten Sudan’s split with its restive south. With Darfur ravaged to submission, Khartoum’s generals realised they didn’t have the resources left for prosecuting another war.

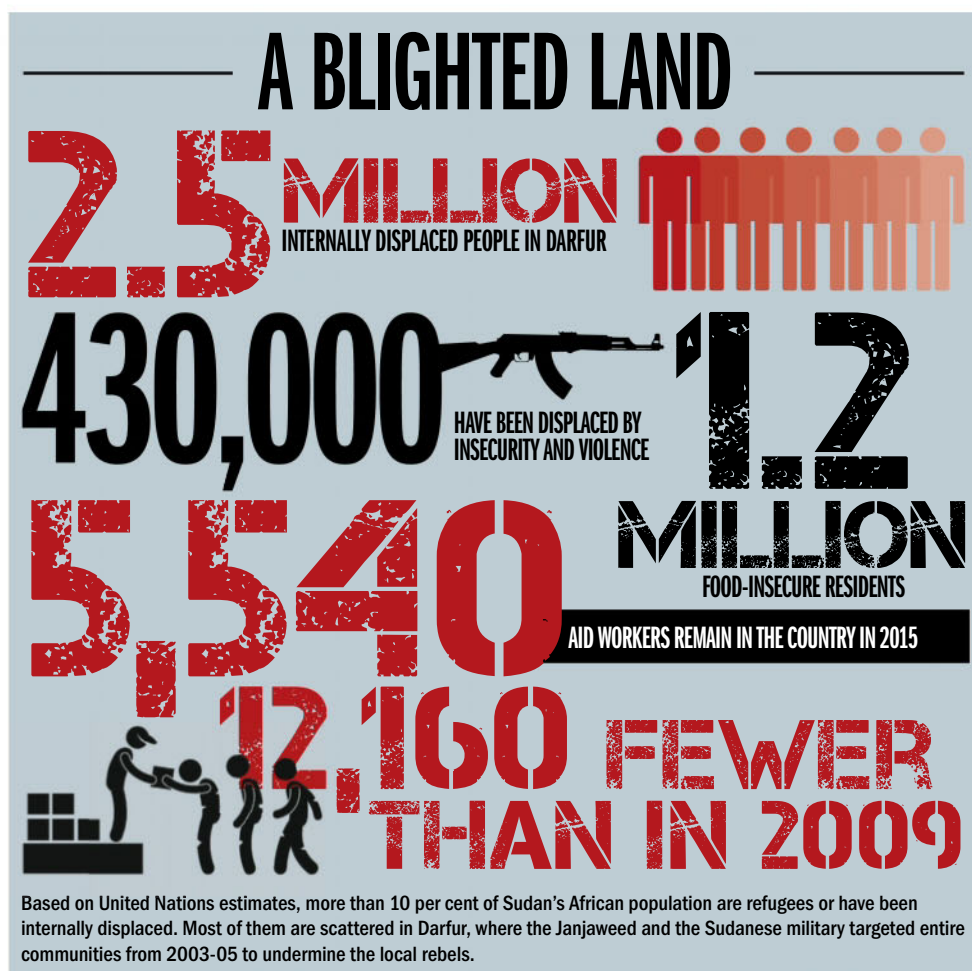
Once the Comprehensive Peace Agreement was signed in 2005 with the Sudan People’s Liberation Army/Movement (SPLA/M), Sudan’s Second Civil War finally ended, a new government was organised – al-Bashir remained president – and a transition was underway for the creation of South Sudan.

Not before further bloodshed, however. Modern warfare in Sudan has a post-apocalyptic dimension. With UNAMID providing a security umbrella over their territories, the rebel factions arrayed against Khartoum were emboldened. The JEM, the SLA, and the older SPLA/M, led by the diplomatic outlaw John Garang who was allegedly trained by Israeli advisers in his youth, fielded ever-larger armies equipped with the waste of endless war.

One of the curious innovations that emerged from Africa’s constant violence is the ‘Technical’, a jerry-rigged pickup truck, often a second or third-hand Toyota or Mitsubishi, used for open battle. First sighted in Chad, where they wrought havoc on Libyan tanks, the Technical thrived in war zones like Afghanistan and Somalia.

In Sudan, however, the Technical became the fighting vehicle of choice for both the government and rebels. The cab’s windshield and roof are often removed to reduce its profile in the bush and depending on its role, a multitude of weapons are mounted in the rear.

“In a mere 29 months, the Janjaweed would butcher between 200,000 and 450,000 people and destroy countless villages”



This is usually a 12.7mm DShK. Among the SAF, a Chinese Type 85 machine gun suffices, being a light-weight version of its Russian counterpart. As self-propelled artillery, a recoilless rifle or a 12-barrel 107mm multiple rocket launcher is the preferred main armament. To deter low-flying aircraft and gunships, a Russian ZU-23 or 14.5mm KPV are the favourites.

Khartoum’s own arsenal is also quite colourful. The government-owned Military Industrial Corporation (MIC) runs various factories that provide everything from bullets to tank shells and spare parts for Sudan’s military. The MIC’s remarkable vertical integration allows it to manufacture self-propelled howitzers, trucks and light aircraft. There is sufficient circumstantial evidence that Khartoum’s military power is enabled by a large pool of technicians from Iran, China, Ukraine and Russia. Meanwhile, with the campaign in South Kordofan and the Nuba Mountains turning into a quagmire, the Janjaweed have stepped out of the shadows.

A report published in 2014 by the Enough Project revealed that Darfuris who were

once a part of the Janjaweed were trained, armed and integrated alongside the regular Sudanese military. This took place over an unspecified period in military bases outside Khartoum. Most damning, according to the report’s authors, is the recognition granted to Janjaweed leaders like Muhammad Hamdan Dagolo, now a Brigadier General in charge of the Rapid Security Force (RSF).

Equipped with government-issued IDs and weapons, the RSF are emulating previous Janjaweed activity. In the absence of regular forces, they destroy homes and villages in South Kordofan and the Nuba Mountains. The RSF also participate in combined arms offensives together with SAF units.

It is believed that separate units of the RSF are terrorising Darfur anew. Since 2014, between 200,000 to 400,000 people have been displaced; this is on top of more than 2 million refugees languishing in the region.

There are no peace talks between the splintered rebel factions and Khartoum. Ruled by a despot the world doesn’t care about, Sudan’s outlook is bleak. Even if the country survives intact, its wounds may never heal.

2009

On 4 March, the International Criminal Court (ICC) issues an arrest warrant for Omar al-Bashir on seven counts of crimes against humanity and war crimes. Al-Bashir’s foreign trips are confined to neighbouring states, the Middle East and China. On 12 July 2010, ICC adds three counts of genocide to al-Bashir’s arrest warrant.



2011

A referendum decides South Sudan’s secession and independence is granted on 9 July. The newest country in the world is also one of the poorest, with a 90 per cent illiteracy rate. Israel immediately recognises the new state.

2013

The JEM joins the conflict in South Kordofan, fighting alongside the SPLA/M and tribal fighters. Disputes within President Salva Kiir’s administration lead to the South Sudanese Civil War.

2015

A major offensive is launched by the JEM in April to capture Southern Darfur State, but they are defeated. Omar al-Bashir is re-elected by majority vote and sworn in as president on 2 June.

BOOK REVIEWS

History of War's pick of the newest military history titles waiting for you on the shelves

THE KALAHARI KILLINGS

THE TRUE STORY OF A WARTIME DOUBLE MURDER IN BOTSWANA IN 1943

Writer Jonathan Laverick **Price** £12.99 **Publisher** The History Press

HOW THE DISAPPEARANCE OF TWO RAF PILOTS IN CENTRAL AFRICA SPARKED A MURDER TRIAL THAT CAPTIVATED THE WORLD

More than 450,000 British and Commonwealth servicemen were killed during World War II, yet in the middle of all that death and destruction the names of two individuals made newspaper headlines around the world. Gordon Edwards and Walter Adamson weren't killed in action, however. They were murdered.

Jonathan Laverick stumbled across their story a couple of years ago on a website forum, and in *The Kalahari Killings* explores both the investigation into the murders and trial that followed, as well as the incident's aftermath. In doing so, he tells a story that would serve well as the plot of an airport novel, while painting a fascinating picture of life in central Africa during

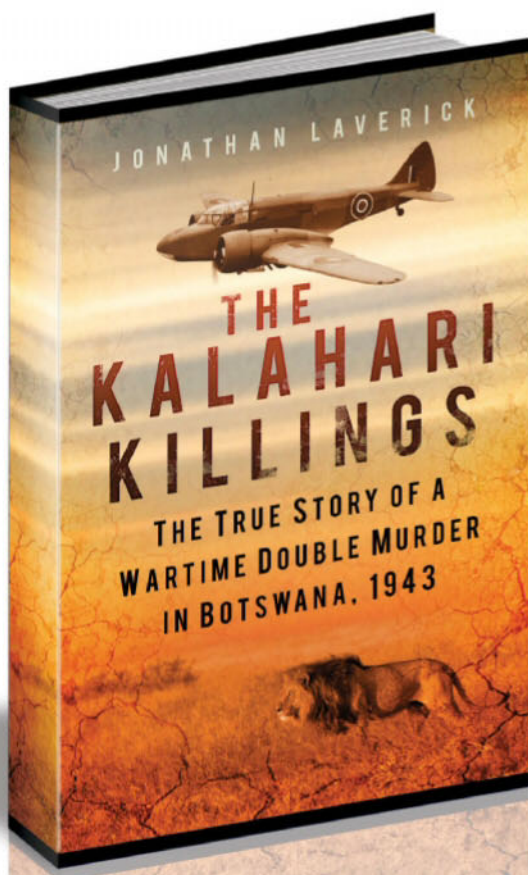
the middle of the 20th century, from both sides of the colonial divide.

Edwards and Adamson were both RAF airmen and had been sent to train as pilots with the Rhodesian Air Training Group in the relative safety of present-day Zimbabwe. On 4 October 1943, the Airspeed Oxford they were piloting disappeared. It was found hundreds of miles off course on a saltpan in what was then known as Bechuanaland, in present-day Botswana. There was no sign, however, of either pilot. Their mysterious disappearance created widespread interest, as the barely known Tyua tribe and some of its more macabre customs came under the scrutiny of the media.

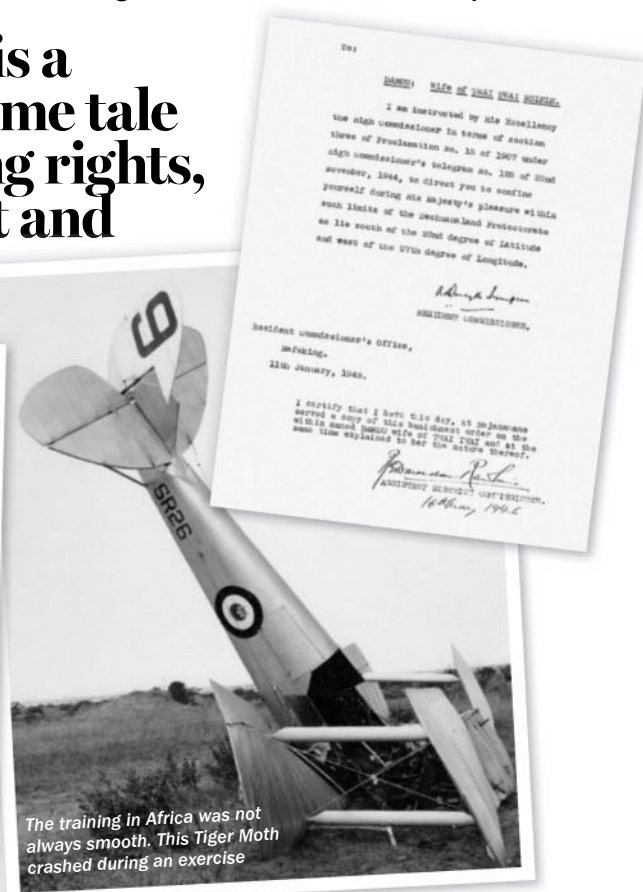
Three local bushmen along with five women were arrested for the murder, and Laverick uses the court notes of their trial to piece together the fate of the airmen. What emerges is a bizarrely gruesome tale involving hunting rights, dismemberment and black magic as two disparate cultures collided in one of the planet's remotest spots.

Part history, part murder-mystery story, part scrapbook, the book's narrative does have a tendency to sprawl. The book's beginning, for example, bounces between Edwards' career prior to being posted to Africa, and a potted history of Bechuanaland. That slight gripe aside, the book remains genuinely gripping in places while offering real insight into a little-known corner of history.

“What emerges is a bizarrely gruesome tale involving hunting rights, dismemberment and black magic”



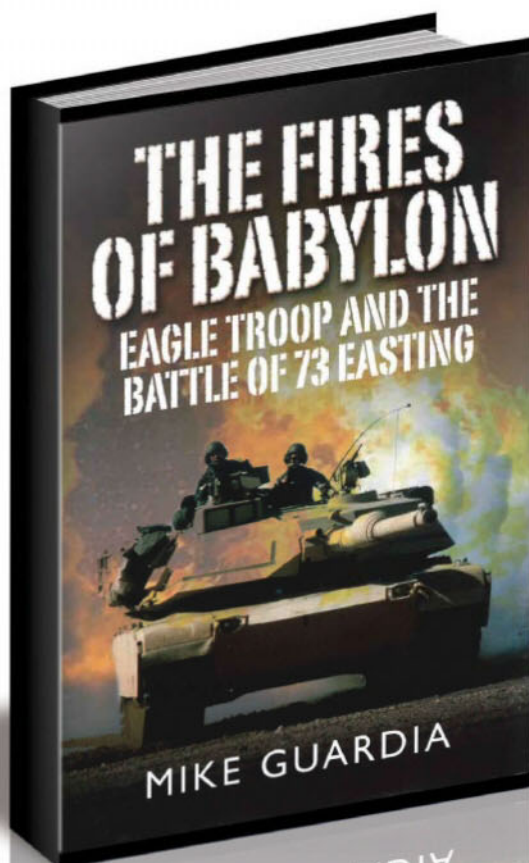
Gordon Edwards (right), who was murdered in 1943



The training in Africa was not always smooth. This Tiger Moth crashed during an exercise

THE FIRES OF BABYLON: EAGLE TROOP AND THE BATTLE OF 73 EASTING

Writer Mike Guardia **Price** £19.99 **Publisher** Casemate



IN THE HEAT OF THE GULF WAR, 12 AMERICAN TANKS SMASHED THROUGH THE IRAQI REPUBLICAN GUARD – A MONUMENTAL BATTLE IN A WAR THAT CHANGED THE WORLD

The Gulf War is arguably the most pivotal conflict of the modern world. It came as the ashes of the Cold War were being swept aside and the United States' focus turned to the Middle East, where it remains to this day. By 1990, when Saddam Hussein invaded the small emirate of Kuwait, the US Army had also undergone a significant transformation since the Vietnam War. And for many, the Gulf War was the first conflict experienced live, through the television and newspapers. All of this feeds directly into Mike Guardia's account of the Battle of 73 Easting, important components that provide the backdrop to what is, in essence, the story of a powerful tank battle.

On 26 February, just days before the war ended, Eagle Troop of the US VII Corps were advancing into Iraq. They would encounter the Tawakalna Brigade of Iraq's elite Republican Guard. The troop's 12 tanks were surely finished, but in under 25 minutes the

Americans' M1A1 tanks had destroyed more than 50 enemy vehicles and smashed a hole straight through to the Iraqi front. It was a remarkable victory in an unremarkable place; so barren and featureless was the desert land in which it was fought that the battle's name is taken from the 'Easting' longitudinal gridline on the military map, rather than any distinctive local feature or monument.

Guardia's writing does justice to the exciting story, providing a minute-by-minute account collated through archival research and interviews with the members of Eagle Troop. There's no sugarcoating either – not all memoirs show the soldiers in a favourable light. This is a no-holds-barred account, told as truthfully as possible. It's also the story of how the technology of war had changed, with particular focus on tanks and weaponry used by the Armored Cavalry Regiment. Overall, it's gripping stuff.

“There's no sugarcoating either – not all memoirs show the soldiers in a favourable light. This is a no-holds-barred account, told as truthfully as possible”

AFRICA AND WORLD WAR II

A COLLECTION OF ESSAYS EXAMINING THE MILITARY, ECONOMIC AND POLITICAL IMPORTANCE OF AFRICA DURING WORLD WAR II

Editors Judith A Byfield, Carolyn A Brown, Timothy Parsons and Ahmad Alawad Sikainga **Price** £22.99 **Publisher** Cambridge University Press

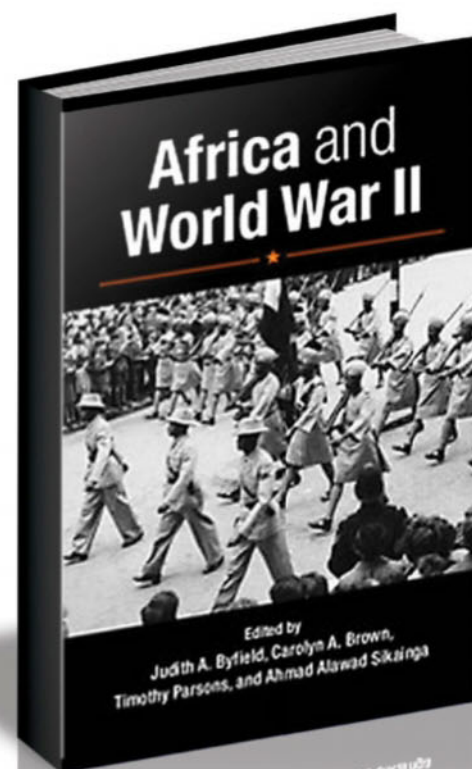
Africa is far from the first place that springs to mind in relation to World War II. This book, however, offers an extensive look at the effects of the war on Africa, and vice versa. Taken from a long list of academics, the essays included focus on three important issues: periodisation, colonial policies and the impact on African people and communities. As is no doubt already clear, this is far from light reading; indeed, it is a specialist tome for a specialist

subject, and more suited to anyone studying the wider effects of the war at an academic or advanced level.

It will come as little surprise that this book breaks new ground in its examination of Africa's position in the war. It is the first time a critical analysis of this kind has been collated on the subject, and for that it will be a definite interest for the hardcore researchers and enthusiasts, if not casual readers based on curiosity alone.

The writing is dense and most suited for the experienced academic reader, but the essays are divided into manageable areas of study. The first section includes introductory essays that offer a continent-wide overview of Africa's efforts in supporting and sustaining the Allied efforts, while the following six sections include individual case studies on different parts of the continent that examine the changing political and economic landscapes.

For those brave enough to take on its near-500 pages, there is plenty to learn. For example, did you know that Africa's war started way back in 1935, when Italy invaded? Or that despite its contributions to the Allied war effort – which included labour, resources, and great sacrifices to its people – it struggled for years



to be properly recognised, a fact that underpins the racial and social problems between Africa before, during and since the war. Covering these issues in great depth, this book is for the most committed of World War II readers.

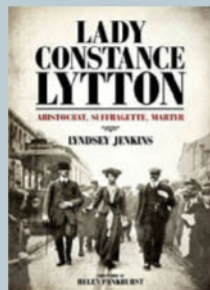
Native west Africans help the crew of 200 Squadron load their plane



ALL ABOUT HISTORY RECOMMENDED READING

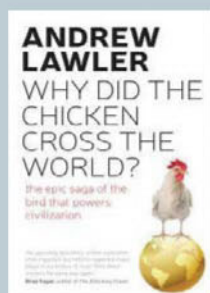
LADY CONSTANCE LYTTON

Subtitled 'Aristocrat, Suffragette, Martyr', this biography isn't just aimed at those already interested in feminism, but society in general at the turn of the last century.



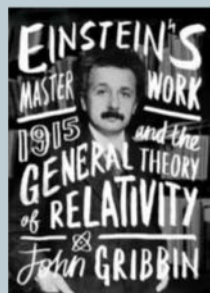
WHY DID THE CHICKEN CROSS THE WORLD?

Those dying to know will find everything they could wish to learn about chickens through history. Those unmoved to learn more can feel assured they are missing nothing.



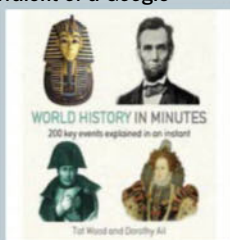
EINSTEIN'S MASTERWORK

Providing an engaging evaluation of the great scientist's theories, *Einstein's Masterwork* is an ideal read for anyone curious to find out more about the man behind the physics.



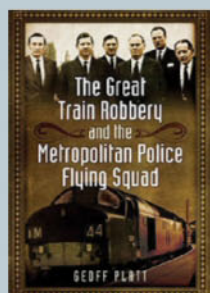
WORLD HISTORY IN MINUTES

Almost the paper equivalent of a Google search, this book approaches 200 key events from the last 5,000 years of history. If nothing else, what's omitted here is as interesting as what is included.



THE GREAT TRAIN ROBBERY

Some interesting insights into how the case of one of Britain's most audacious robberies was solved, complete with input from some of the surviving investigating officers.



CAVALIER CAPITAL: OXFORD IN THE ENGLISH CIVIL WAR 1642-1646

Writer John Barratt **Price** £19.99 **Publisher** Helion

AN ACCOUNT OF OXFORD'S ROLE IN THE CIVIL WAR – THE POLITICS, PEOPLE AND ITS POSITION AS THE NATION'S 'ROYALIST CAPITAL'

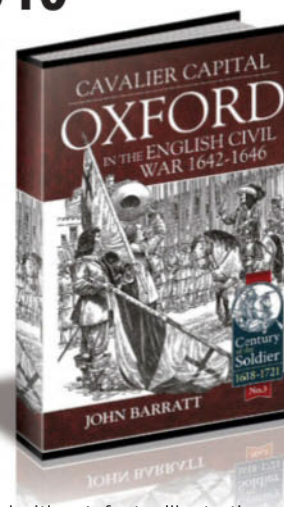
Every major conflict has its share of untold stories and hidden histories. In the third book of Helion's *Century Of The Soldier* series, John Barratt explores one such story, namely the role of the city of Oxford during the English Civil War.

The book claims to be the first such account to be published in 75 years and does a thorough job of it, covering all aspects from the effects of the civil war to the most prominent figures of the time, right up to the final siege that led to the fall of the city of Oxford.

The obvious caveat, of course, is that the book will ultimately have more appeal to anyone with a specialist interest in or local to Oxford. However, as the story unfolds, you will soon forget that – Oxford's role in the war goes way beyond the city limits. Oxford, as Barratt tells it, was key for the Royalists, who would occupy the city and make it their 'Royalist Capital'. It became the manufacturing centre of munitions and armoury, and it was also home to the king's court and operation of the Royalist government and administration.

Barratt looks at all levels of the Royalist forces, examining the life of the garrison soldiers and the campaigns in which they fought. Barratt's writing is never overly dense, as similar books can tend to be, and the pages are filled with artefacts, illustrations, maps and letters from the time. And as thorough as his account of Oxford is, the chapters are to the point, each covering a different aspect of the city's role or experience in the war, and making for a concise, easily digestible read.

Though not a suitable starting place for newcomers to the history of the English Civil War, it's a solid addition for anyone with furthered interest in the subject.



THE CRIME AND THE SILENCE: CONFRONTING A MASSACRE

Writer Anna Bikont **Price** £20 **Publisher** William Heinemann

A CHILLING INVESTIGATION INTO ONE OF POLAND'S DARKEST SECRETS OF WORLD WAR II

On 10 July 1941, almost the entire Jewish community in the town of Jedwabne, Eastern Poland, was rounded up and marched to a nearby barn. The men, women and children were then locked inside and the barn set ablaze. Not one person survived.

News of the massacre soon began to spread. Although the occupying Nazi forces had conducted similar atrocities elsewhere throughout the country, nothing had yet been witnessed on this scale. But there was something else about this mass killing that was peculiar. Something that would stay hidden for more than 60 years.

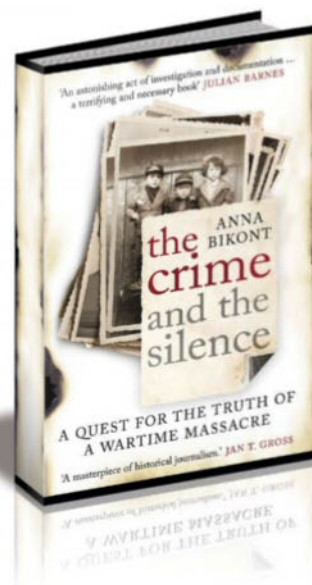
Finally, in 2001, the sinister truth was exposed when American historian Jan T Gross published *Neighbors*. His book claimed that the massacre had been committed not by Nazi death squads, as had been recorded, but by the victims' fellow Poles.

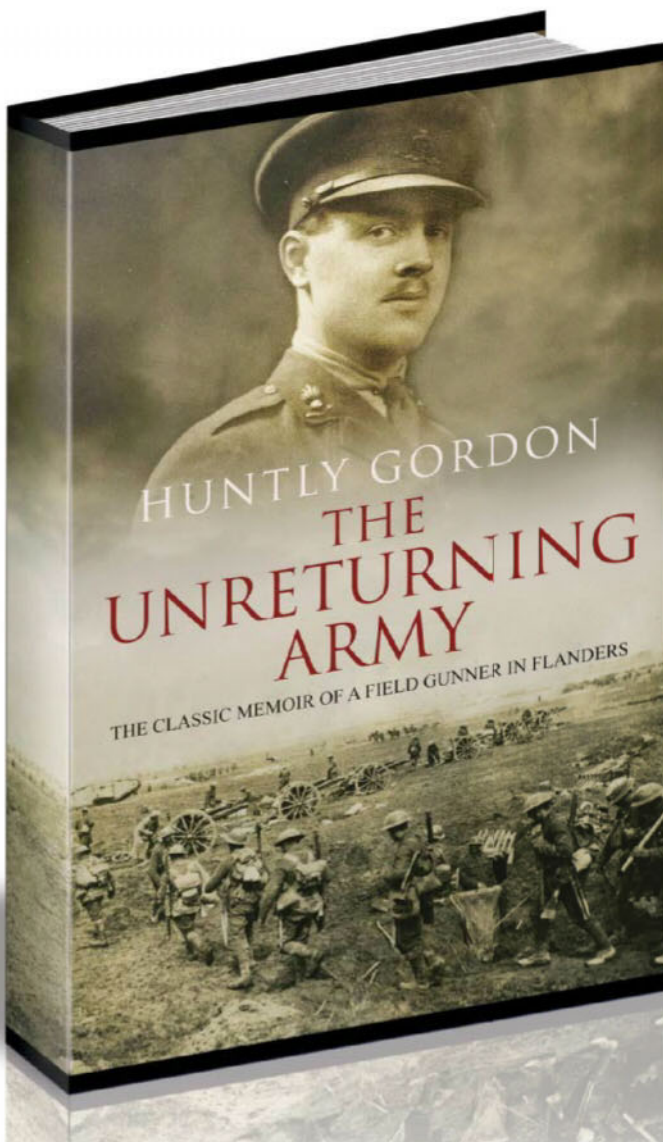
The book caused uproar in Poland. Counter claims were made and a government investigation was begun. Polish journalist Anna Bikont found herself drawn into the debate and became obsessed with uncovering the truth. Her book *The Crime And The Silence* is her account of how she went about that and what she discovered.

Over four years, through dogged investigative work conducted against a backdrop of omerta

and resistance from the locals, she uncovered a terrible truth. Not only had the townsfolk committed the mass murder under the instruction of their new German occupiers – who had recently forced out the Soviets – but they'd done so willingly. More than 900 people had lost their lives in an orgy of killing that the barn burning had only been a part of. Others had been bludgeoned, stabbed and drowned while a band played to cover up their screams.

This book, however, is more than a simple account of an evil day. It is about the hatred that drove ordinary people to murder their neighbours, as well as their neighbours' children. It is a portrait of a people still struggling to accept their own dark past. And ultimately it's about the sickness that lingers within a community where such a crime has been committed. This is a profound and haunting piece of work.





THE UNRETURNING ARMY: A FIELD GUNNER IN FLANDERS

Writer Huntly Gordon **Price** £8.99 **Publisher** Bantam Books

NEW SECRETS AND INSIGHTS ARE UNLOCKED AS THIS WORLD WAR I CLASSIC GETS THE OLD 'REVISED-EDITION' TREATMENT

This memoir of a World War I artillery officer is based around letters that the then 20-year-old author Huntly Gordon sent home to his family in 1917-18. First published in 1967, they are bound together by a narrative that wasn't written 50 years after the event, as previously believed, but in November 1918, just as the guns fell silent. In that respect, to borrow a phrase from the preface, this revised book is almost like a "last live broadcast" from the battlefields of Flanders.

Despite being written almost a century ago, what grabs you about this work is its freshness. Gordon may have been born when Britannia still ruled the waves, but his voice is distinctly youthful. Unstuffy, sensitive and sprinkled with wry humour, his eyewitness account of the slaughter is a captivating read.

The narrative follows his journey from Edwardian schoolboy in 1914 to battle-scarred veteran four years later. In between, he's rushed through training, bundled on a boat to France in time for the Battle of Passchendaele, before being blown up and hospitalised with

no less than 14 different wounds to his shattered body.

In his ten months of combat, Gordon witnessed not just Passchendaele's horrors, but the German's 1918 offensive and the resulting chaotic Allied retreat. His writing brings that world pulsatingly back to life. Men and mules drowning in mud, screaming shellfire and pre-painkiller hospital wards filled with wailing casualties – all are recreated in remarkable detail.

This edition also contains a postscript with previously unseen material. It ends with an anecdote about a chance encounter in 1928 between Gordon and a man who'd saved his life ten years previously. This sweet vignette rounds the book out well. The narrative starts in the peace of Gordon's idyllic boyhood, and ends with him having found peace – of sorts – once again.

The Unreturning Army may have darkness at its heart, but Gordon delivers his account of that terrible war with a deft touch, swerving sensationalism in favour of dignified honesty throughout. A remarkable read.

PROFESSOR PORSCHE'S WARS

Writer Karl Ludvigsen **Price** £30 **Publisher** Pen & Sword

DISCOVER HOW THE FOUNDER OF THE WORLD'S LUXURY SPORTS CAR BRAND BEGAN HIS CAREER BUILDING BRILLIANT AND TERRIFYING WAR MACHINES

It's a favourite piece of Nazi trivia that Hugo Boss designed the neat, austere uniforms of the Wehrmacht, ensuring they could at least claim to be the best-dressed invasion force to date. However, it's less known that many of the Third Reich's military machines were designed by Ferdinand Porsche, founder of the famous sports car brand that now supplies millionaires' garages the world over. In his book, Karl Ludvigsen explores Porsche's career and his work with the military, from his early years with Austro Daimler to founding his own company in the early 1930s, to becoming one of Nazi Germany's most trusted engineers.

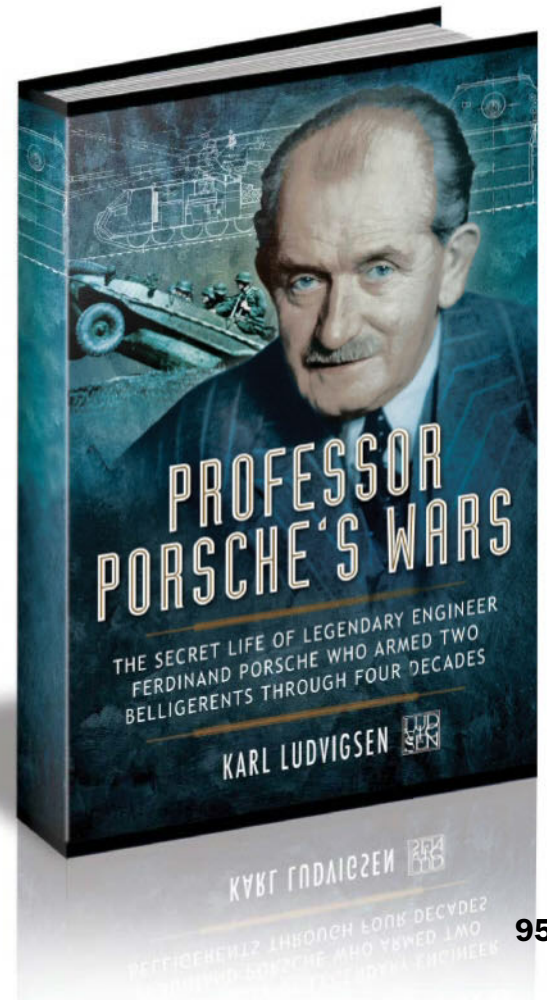
Ludvigsen tells Porsche's story within the wider context of a Europe on its journey towards devastating wars that dominated every aspect of life, including the fledgling automotive industry. In the midst of the Great War, there was no need for high-performance racers, or comfortable domestic cars – armour, firepower and brutal efficiency were demanded to outsmart the Triple Entente. Working for the

Austro Daimler company, Porsche designed ever-efficient engines as well as tough, hard-working tug vehicles, also known as land trains. These were put to work hauling supplies, huge artillery guns and ammunition to and from the frontline, across nearly any terrain.

Ludvigsen very literally lifts the bonnet on Europe's engineering geniuses, never flinching from the complex technical explanations each new design requires.

As the pages turn, you get a real sense of the journey that not only Porsche but the industry at the time was taking, as the military demands increased and ever deadlier weapons were commissioned. Moving into the 1930s, the clumsy-looking armoured cars of the 1920s turn into deadly efficient Schwimmwagens, and the rustic-looking hulking land trains morph into tracked tanks.

While the sheer depth of this book may be intimidating to the casual reader, it's truly an essential read for every petrolhead and an intriguing insight for students of the period.



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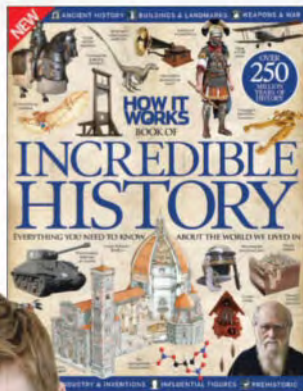
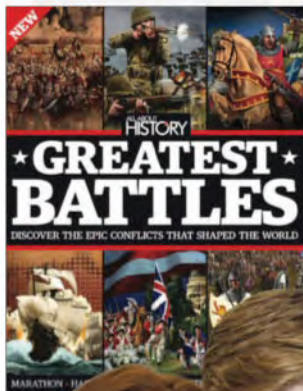


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WAR IN NUMBERS

THE BATTLE OF BRITAIN

The figures from the fight in the skies to stop the Nazis crossing the Channel

3,000

▲ Aircrew served with Fighter Command during the battle

The Luftwaffe lost up to

1,900

aircraft and more than

2,500

crew were killed

▼ Pilots were lost by Fighter Command

544

▼ RAF aircraft were downed

1,000

◀ RAF pilots lost their lives

1
IN
6

victories were scored by Sgt Josef František, the highest of the battle

17

▼ German bombers started on 1 May 1940

1,758

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